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'N OORSIG VIR DIE ALGEMENE GENEESHEER VAN DIE TIPIESE BEHANDELING VIR 'N GEVAL VAN TUBERKULOSE

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Hierdie kort verslag oor 'n baie interessante geval van tuberkulose het ten doel om die algemene praktisyn die eenvoudigheid van die daaglikse behandeling in die hospitale te laat besef, asook die uitstaande resultate wat daarop volg. Die geval wat hier beskryf word, is een van baie soortgelyke gevalle wat ons in hierdie hospitaal teëkom.

Dit is 'n geval van tuberkulose van die tuba fallopii (adneksa) met bloed-verspreiding na die longe om miliêre longtuberkulose te veroorsaak, en tuberkulose-harsingsvliesontsteking wat daarop volg.

Die adneksa-tuberkulose het deurgebreek na die sigmoidkolon, bloeding daar veroorsaak en ook die blaas aangetas.

'n Bantoe-vrou, 27 jaar oud, met 3 kinders is in November 1953 in King Edward VIII-hospitaal opgeneem in 'n toestand van komatose.

Haar ruggraatvog het met direkte mikroskopiese ondersoek teringkieme gewys. X-straal het miliêre longtuberkulose gewys. Haar gewig was 123 pond, haar koors was tussen 97-101°F., en haar spuug was direk en kultuur-positief vir tuberkulose.

Na effense beterskap is sy na King George V-hospitaal oorgeplaas waar by verdere ondersoek geblyk het dat sy 'n baie onwelriekende witterige vagina-afskeiding gehad het, en 'n paar dae daarna was daar ook bloed in die afgang. By ondersoek was gevind dat sy pyn in albei sye gehad het, asook pyn oor die blaas. Geen swelsels of massas was voelbaar nie.

Die bloeding was afkomstig van die sigmoidkolon. 'n Diagnose is gemaak van tuberkulose van die adneksa met verspreiding na die blaas en erosie van die sigmoidkolon. Die geval was dus een van wydverspreide tuberkulose en een wat 'n paar jaar gelede weinig hoop op beterskap gehad het; en tog is hierdie geval binne 8 maande na roetine-hospitaalbehandeling gesond verklaar en ontslaan.

Die pasiënt se spuug en maagvog was toe al 6 maande negatief, en die ruggraatvog al 4 maande normaal. Haar long X-straal het niks patologies gewys nie en die afskeiding het verdwyn; geen abnormaliteit was by ondersoek gevind nie. Die gewig was toe 186 pond—'n vermeerdering van 63 pond in 8 maande. Gedurende die laaste 2 maande was sy in sale waar die pasiënte hulle eie werk doen, beddens opmaak en saal skoonmaak, en vir 4 uur elke dag het sy by die Rooikruis gewerk. Hierdie roetine is ingestel om pasiënte weer by die normale lewe aan te pas alvorens hul ontslaan word. Ses maande na ontslag was sy by ondersoek fris en gesond, en haar gewig dieselfde.

BEHANDELING

Die behandeling van hierdie geval was dieselfde as vir enige ander teringgeval in die hospitaal. Al verskil was dat sy vir 10 dae ACTH bygekry het soos in alle harsingsvliesontstekinggevalle in hierdie hospitaal.

Die gewone middels was INH (Rimifon-Roche), PAS en streptomycin, wat in kombinasie gegee was.

Die rede vir die gebruik van ACTH in tuberkulose-harsingsvliesontsteking is dat hierdie hormoon alle ontsteking, selreaksie en die normale verloop van abnormale reaksies verhoed, en hierdeur word dit voorkom dat die harsingsvlies enige reaksie teen die teringkiem veroorsaak. Daar is dus geen swelling, afskeiding van vog of vorming van aangroeisels nie. Die gevolg is dat alles normaal bly, en die INH kan dus tot in die bloedsomloop deurdring en die kieme daadwerklik aanval en vernietig. Streptomycin dring natuurlik in baie lae konsentrasies deur, sodat dit belangrik is om INH te gebruik wat in hoë konsentrasies deurdring. Hierdeur word die kiem vernietig en die ACTH verhoed dat enige permanente skade aangerig word.

INH veroorsaak 'n reaksie in die sel met die gevolg dat die vermenigvuldiging van teringkieme verhoed word. Dit het geen ander kiemdodende krag nie. Streptomycin veroorsaak ook 'n selreaksie maar het daarby kiemdodende krag. PAS gebruik ons nog waar

die pasiënt INH-sensitief is. Dit is belangrik dat òf INH òf PAS saam met streptomycin gegee word.

Dosisse

ACTH (Purified Corticotropin Gel, Wilson). Die gel word intramuskulêr in dosisse van 40 eenhede elke 12 uur vir 10 dae gegee. Hierdie dosis is voldoende in die meeste gevalle. Hierdie geval het 40 eenhede Corticotropin Gel gehad elke 12 uur vir 5 dae en daarna 80 eenhede per dag vir 5 dae.

INH. Die dosis is 400 mg. daagliks.

Streptomycin. Die gewone dosis is streptomycin 1 g. elke 3de dag. Gewoonlik word 1 g. daagliks vir 14 dae gegee en daarna elke 3de dag. Hierdie geval het dieselfde behandeling gekry.

PAS. Die pasiënt het 10 g. daagliks vir 14 dae gekry. Dit is nie ons gewone behandeling nie maar in hierdie geval was dit raadsaam om daadwerklik op te tree. In gevalle waar pasiënte INH-sensitief is, of waar die kiem 'n weerstand teen INH opgebou het, is PAS baie waardevol: dit behoort in alle gevalle wat nie met streptomycin en INH goed vorder nie, gebruik te word.

OPSOMMING

'n Geval word bespreek van 'n Bantoe-vrou met wydverspreide tuberkulose wat binne 8 maande met gewone tuberkulose-behandeling gesond geword het. Die tuberkulose van die adneksa, die sigmoidkolon en die blaas, saam met miliêre tuberkulose en tuberkulose-harsingsvliesontsteking is opgeklaar sonder enige nagevolge.

Die geval word hoofsaaklik beskryf om die algemene praktisyn meer selfvertroue te gee in die gewone alledaagse mediese behandeling van tuberkulose. Die gebruik van INH 400 mg. daagliks, en streptomycin 1 g. elke 3de dag, word in alle gevalle as voldoende beskou. ACTH, 40 eenhede elke 12 uur, vir tuberkulose-harsingsvliesontsteking word altyd gebruik vir die eerste 10 dae. PAS kan gebruik word, maar minstens 10 tot 12 g. moet daagliks gegee word.

Die beskrywing van ACTH se werking is eenvoudig, selfs onwetenskaplik, maar dit gee 'n insig in die rede vir die gebruik van so 'n duur middel.

Gewone Teringbehandeling: INH 400 mg. daagliks, streptomycin 1 g. elke 3de dag. Die behandeling behoort vir minstens 18 maande tot 2 jaar te duur en daarna moet gereelde ondersoeke elke 4 of 6 maande onderneem word. Aan pasiënte in nie-stedelike gebiede word INH- en PAS-tablette gegee en op dié manier word die behandeling tuis of by die werk voortgesit.

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VAN DIE REDAKSIE

CHEMIESE ANTISEPSE

Die geskiedenis van die wetenskaplike pogings wat gedurende die afgelope eeu aangewend is om bakteriese infeksies met chemiese middels te bestry is terselfdertyd 'n oorsig wat die hele gebied van bakteriologie dek. Chemoterapie het ná die vroeër stadiums van antisepse en ontsmetting ingetree en mediese navorsers het oënskynlik nou eers dié stadium bereik waar die waarde van baie van die alledaagse en erkende preparate suiwer bakteriologies vasgestel kan word.

Dit is van meer as akademiese belang want 'n onlangse verslag uit die Verenigde State maak melding van die eerste streptokokke[1] wat teen eritromisien weerstand bied. Op die oomblik is eritromisien die laaste oorblywende antibiotiese wapen teen die streptokokke. Misluk die antibiotika dan sal geneeskundiges weer die soektog na 'n doeltreffende kiemdodende middel moet hervat—'n soektog wat die tydperk vóór penisillien gekenmerk het.

Sedert die dae dat Semelweiss sy hande met chloorkalk ontsmet het—en daarvoor uitgejou was—en Lister in 'n ope breuk suiwer karbolsuur gebruik het, soek die wêreld nog steeds na 'n chemikalie wat nie net die vel ontsmet nie maar ook die vermenigvuldiging van bakterieë in 'n chirurgiese of traumatiese wond sal verhoed. Lister het dit gelukkig getref dat die gevolge van karbolsuurvergiftiging of van ernstige weefselnekrose nie vir sy pasiënt noodlottig was nie; karbolsuur is egter nog vandag die maatstaf vir alle ander preparate.

Sir Almroth Wright was die eerste om te ontwaak uit die droom dat chemiese middels 'n wond doeltreffend kon ontsmet. Die akri- en proflaviene het destyds hoogty gevier en hy het met minagting die gedagte bejeën dat chemiese middels goed is vir 'n wond wat té diep of nie betyds behandel is nie. Ongeveer op hierdie tydstip is dit ook besef dat 'n antiseptiese oplossing isotonies en tot 'n gepaste *pH* gebuffer moet word om van waarde te wees. Hierna geoordeel het baie van die standaardpreparate nie die paal gehaal nie. Alhoewel mercurochrome bv. besonder byval in die 1920s gevind het en 'n reputasie besit het wat vandag nog deur talle geneeshere aanvaar word, verklaar so 'n gesaghebbende soos professor L. P. Garrod [2, 3] dat: ‚Faulty laboratory work and credulous clinical observations have rarely perpetrated a thera-

EDITORIAL

CHEMICAL ANTISEPSIS

To recount the scientific attempts that have been made to combat bacterial infection by chemical means over the last century is to survey the entire field of bacteriology. The earlier stages of disinfection and antisepsis have been followed by that of chemotherapy, and medical research workers have probably only now reached the stage where a true bacteriological assessment can be made of the value of many of the preparations accepted and in daily use at the present time.

This is of more than academic interest, for a recent publication in the United States reports the first erythromycin-resistant strain of streptococci,[1] against which erythromycin is at present the last antibiotic line of defence. If the antibiotics were to fail, the medical profession would revert to the search for an effective antiseptic agent that characterized the pre-penicillin era of medicine.

Ever since Semelweiss disinfected his hands with chlorinated lime (and was laughed out of school for it) and Lister introduced pure carbolic acid into a compound fracture wound, the world has been searching for a chemical that will not only render the skin antiseptic but also prevent bacterial multiplication within a surgical or a traumatic wound. Lister was lucky that his patient survived death from carbolic acid poisoning or the delayed effects of extensive tissue necrosis; nevertheless, carbolic acid has remained to the present day the measure beside which all other preparations are made to stand or fall.

Sir Almroth Wright poured the first effective douche of cold water on the idea that a wound could be satisfactorily disinfected by chemical means. It was the heyday of the flavines, acri- and pro-, and he scorned the notion that a wound whose depths were inaccessible or in which treatment was delayed could be benefited by their application. About this time, too, it came to be appreciated that for an antiseptic solution to be useful it must be isotonic and buffered to a suitable pH. By these criteria many of the standard preparations failed to pass muster. Although mercurochrome, for

peutic fraud on such a scale .... I find mercurochrome quite incapable of doing what was claimed for it'.

Die flaviene het oënskynlik aan die voorpunt van plaaslike antisepse gestaan maar in die jongste tyd word daar aanspraak gemaak vir 'n nuwe preparaat Hibitane (bis - p-chlorophenyl-diguanido-hexane) wat moontlik die flavine uit hul plek sal lig. Onder dieselfde eksperimentele kondisies is gevind dat as muise—wat eers met 'n virulente kweek van *Streptococcus pyogenes* ingespuit is—'n parenterale inspuiting van Hibitane kry, die oorlewingsyfer 90% was, in vergelyking met 'n 30%-syfer vir die flaviene. Met die oog op die verhoogde weerstand wat hierdie organismes tot die antibiotika bied, is Hibitane 'n naam wat die moeite werd mag wees om te onthou.

Die ideaal van die kliniese bakterioloog—'n doeltreffende antibakteriese middel vir die liggaam—is eers in 1935 deur die sulfonamiede bereik. Daarna, in 1940, het die eerste van die antibiotika—penisillien—'n hele onwenteling in die mediese wêreld teweeggebring met die gevolg dat navorsing i.v.m. plaaslike antiseptiese middels nie meer so dringend was nie en selfs 'n bietjie verouderd; deesdae word die bakterioloog se tyd grotendeels in beslag geneem met die bepaling van die doeltreffendheid van die antibiotika in die stryd teen verskillende organismes. Ondersoek na die gebruik van die meer alledaagse chemikalieë wat gebruik word om bakterieë te bestry is minder interessant en op hierdie tydstip minder dringend; dit ly egter geen twyfel nie dat hul in die daelikse lewe van waarde bly. In sommige inrigtings alvorens hul ontslaan word, word pasiente wat van aansteeklike siektes herstel nog in 'n karboloplossing ‚gebad', wat 1/6de van die vermoedelik kiemdodende sterkte is; en wie kan beweer dat sterilisasie en antisepse soos dit vandag in die huis, die spreekkamer en die hospitaal toegepas word, nie verbeter kan word nie?

1. Martin, W. J., Nichols, D. R., Wellman, R.E. en Geraie, J. E. (1954): Proc. Mayo Clin., **29,** 379.
2. Garrod, L. P. (1955): Proc. Roy. Soc. Med., **48,** 26.
3. *Idem* (1931): *Ibid.*, **24,** 82.

example, had a tremendous vogue in the 1920s and gained a reputation which is accepted by countless practitioners to the present day, no less an authority than Professor L. P. Garrod [2, 3] states: 'Faulty laboratory work and credulous clinical observations have rarely perpetrated a therapeutic fraud on such a scale .... I find mercurochrome quite incapable of doing what was claimed for it'.

The flavines seemed to lead in the field of local antisepsis, but recent claims for a new preparation, Hibitane (bis-p-chlorophenyl-diguanido-hexane) might well herald their fall from favour. Under equal experimental conditions parenteral injection of Hibitane following injection of a virulent culture of *Streptococcus pyogenes* was found to produce a 90% survival rate in mice as compared with 30% with the flavines. In view of the increasing resistance of these organisms to antibiotics, Hibitane may well be a name to remember.

The ideal of the clinical bacteriologist—an effective systemic antibacterial agent—was only realized with the advent of the sulphonamides in 1935. Thereafter, in 1940, the first of the antibiotics—penicillin—revolutionized medicine and rendered work on local antiseptic agents less urgent and slightly out-of-date; today much of the bacteriologist's time is taken up with an assessment of the efficacy of the antibiotics in combating different strains of organisms. Investigation of the uses of more ordinary chemicals in dealing with bacteria is less interesting, and at present less urgent; but of its value in everyday life there can be no doubt. In some institutions convalescent patients with infectious diseases are still subjected to a 'carbolic bath' in a solution about 1/6th of the strength likely to be bactericidal, in order to render them fit for discharge; and who is to say that present-day standards of sterilization and asepsis as practised in the home, the surgery and the hospital, cannot be improved?

1. Martin, W. J., Nichols, D. R., Wellman, R. E. and Geraie, J. E. (1954) Proc. Mayo Clin., **29,** 379.
2. Garrod, L. P. (1955): Proc. Roy. Soc. Med., **48,** 26.
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PHYSIQUE, TEMPERAMENT AND DISEASE

The relationship between body build and disease is an idea as old as medicine itself. Hippocrates separated *Homo phthisicus* from *Homo apoplecticus*. The clinicians of the 19th century observed that the colic of gallstones occurred in the fat, flatulent female of forty and, more recently, insurance companies have gone to great lengths to convince us that obesity leads—*via* arterial disease and diabetes—towards an early grave.[1]

The difficulty has always been to find objective standards by which to record human physique. It is generally known, for instance, that two persons falling in the same height-weight ratio—possibly both 'normal' according to the insurance tables—may be as different physically as chalk and cheese. Varying grades of muscle and fat content and linearity of body may put two entirely different types of person into the same group according to height and weight. Many workers have tried to overcome this difficulty. Kretschmer, in the 1920s, added a third type to Hippocrates' two, dividing man into pyknic, asthenic and athletic types, and Sheldon *et al.* carried this a step further by attempting to make the assessment more objective. By employing a regular technique—taking 3 photographs of each subject in the nude, standing on a turn-table in front of a grille—they were able to render subjective estimations statistical. Three types, or somatotypes, now emerged, viz.:

Endomorph: roundness of physique, with tendency to put on fat, antero-posterior diameter equal to lateral diameter, and the abdomen preponderating over the chest; small hands and feet; hypoplastic genitalia.

Mesomorph: heavily-muscled, Herculean physique; square, broad shoulders, with narrow waist and massive, heavily-muscled limbs; the chest preponderating over the abdomen.

Ectomorph: linearity of physique most marked—tall,

'gangling' type, with relatively short trunk, long legs and neck, and prominent Adam's apple; drooping shoulders, and acute costal angle.

Sheldon next attempted to correlate these 3 different physiques with 3 variations in temperament—viscerotonia, somatotonia and cerebrotonia—and found that there was sufficient correlation between the respective physique-types and the corresponding temperament-types to be significant. Thus the endomorph showed viscerotonic tendencies (e.g. complacency, love of comfort and food, sociability), the mesomorph was somatotonic (e.g. assertive, insensible to discomfort, taking joy in physical exertion), and the ectomorph was cerebrotonic (restrained, lonely, mentally sharp and alert, introverted).

So far, so good. Even if temperament can be related to body build—and Sheldon believes it can—is the ensuing somatotype proved in a particular disease-pattern? Kretschmer had found that most of his pyknics were cyclothymics with a tendency to manic-depressive psychoses, and that his asthenics were potential schizophrenics; and other workers have confirmed this. Recently, Parnell [2] reviewed this question in the light of clinical experimentation into psychosomatic disorders. He found asthmatic and hay-fever sufferers to be mostly ectomorphs, and he suggested that the narrow nasal passages and the predisposition to tension and anxiety of this type were aetiological factors. Sleep difficulties occurred most frequently in the ectomorph type, due perhaps to the nocturnal counterpart of their intense alertness by day. Digestive disorders—spastic colon, peptic ulceration, loss of appetite, vomiting, etc.—were widely scattered, but mostly in the endomorphic-mesomorph field.

The answer is by no means clear. The precise relationships between temperament, physique and disease proneness have yet to be worked out, but their importance cannot be disregarded. No extreme endomorph is ever likely to be a first-class rugby three-quarter, or to suit the vigorous life of a land surveyor. Therefore, in the matter of giving advice on choice of career or recreation, on mode of life generally, some knowledge of Sheldon's somatotyping is definitely advantageous. Whether we shall one day be able to diagnose a patient's trouble from his body build is something for the future to show.

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EPIDEMIC OF CEREBROSPINAL FEVER IN A CLOSED COMMUNITY

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During the latter half of the winter and the spring of 1953, an epidemic of cerebrospinal fever occurred amongst the African employees of the St. Helena Gold Mine. A total of 22 cases were diagnosed and treated at the mine hospital. Two deaths occurred.

No cases of meningococcal meningitis had previously occurred at St. Helena since June 1952, about one year previously. Since the inception of the mine in 1946 only about 2 sporadic cases a year were observed.

FACTORS PROMOTING THE OUTBREAK

1. *Predisposing Factors*

(*a*) *Climatic Conditions.* It is well known that in Africa epidemics of cerebrospinal fever take place in the cold dry season of the year.[1] The enormous epidemics in Nigeria in 1948-49 and in the Sudan in 1940 are examples of this phenomenon.

In the north-western region of the Orange Free State where St. Helena is situated, the winter is very dry. From the middle of July to the middle of September cold dusty weather prevails. The winds disseminate dust throughout this flat exposed region. The nights are bitterly cold and the relative humidity is low.

(*b*) *Increased Incidence of Respiratory-Tract Infections.* These weather conditions and the great difference in the temperatures between underground and surface conditions were responsible for the high rate of respiratory infection. An increased incidence of respiratory diseases tends to increase the proportion of carriers of the meningococcus and susceptibility to the overt disease.[1] The resultant coughing, expectoration and sneezing further increases the incidence of illnesses that spread by droplet infection. Tropical Africans are particularly susceptible to respiratory infections.

In July, August, September, October and November 31, 35, 51, 22 and 15 cases of respiratory diseases respectively were treated, including sore throat, bronchitis, influenza and pneumonia. The incidence declined with warmer weather in October and November.

(*c*) *The Accommodation* that is provided may be compared with a military cantonment. Most of the dormitories (see Fig. 1), which also act as living rooms, are situated on the circumference of the compound, which measures about 20 acres and encloses the kitchens and other amenities and some other dormitories. Thus a community existed, the members of which slept in common dormitories. The population at the time was approximately 4,000 persons (all African males), who were living much closer than is usually the case.

Each dormitory is occupied only by members of one tribe. Recruits are allocated to their living quarters according to their tribal origin. Each room receives a few recruits at a time, where they associate with veterans of the same tribe. A maximum of 20 miners are allowed to occupy each dormitory. They sleep on two-tiered bunks, on similar lines to those that prevailed in military camps in World War II. The distance between bunk centres is 6 feet. The cubic space allocated to each person is 290 cubic feet, when the room contains its full complement. This capacity is slightly in excess of the minimum, viz. 200 cubic feet, that is required by the Native Labour Regulations.

In March a near-by secondary compound was closed and about 400 Natives were transferred to the main compound. This transfer assisted in the creation of a greater population than was present in former years.

Under wintry conditions the inhabitants are inclined to huddle around a central stove in their living quarters, and they spend longer periods indoors; this renders their association still closer.

2. *Precipitating Factor*

Movement of Population. From the beginning of July until the end of August, large numbers of new recruits had been entering the service of the mine. Mine workers who had completed their contracts were also leaving the mine in fairly substantial numbers. Approximately 1,600 mine workers were engaged and 900 men were discharged, the population being increased by 700, i.e. from 3,500 to 4,200. The vast majority of immigrants were new recruits who had not previously worked in the mining industry.

In all mine compounds there is a continuous inflow and exodus of people. Recruits enter and workers who have completed their contracts depart for their homes. At St. Helena about 250 new workers ordinarily arrive each month and an equal number of persons depart. However, during the months of April, May and June immigration was greatly reduced while departures continued at the usual rate.

During July and August the number of persons involved in emigration and immigration was 2,400—more than 50% of the total population. The turnover of population was therefore very great. By the end of August 37% of the total labour complement consisted of new recruits. These were the susceptibles.

It was observed that the majority of the new workers, viz. 90%, were residents of the tropical countries of Nyasaland and Tanganyika. By the end of August, the tropical population was 1,478, and of these 876 had arrived within the preceding 2 months, i.e. 59% were susceptibles. They emigrated from rural areas where they were not accustomed to the close association in large groups that occurs in mine compounds.

The average period of service of African labourers is 9 months.

THE EPIDEMIC

Preliminary Phase

On 24 July 1953 a case of meningitis, which ended fatally, was admitted to hospital. He was a recruit who had arrived only 3 days previously. A 2nd case was diagnosed on 27 July. This patient was also a recruit, who had only been engaged 6 days before his admission to hospital. Both had arrived on the same day, viz. 21 July, as members of a large batch of new recruits. On 3 August a 3rd case occurred.

No further persons contracted the illness during the following 16 days.

On 19 August another case was diagnosed. Soon afterwards (on 23 August) case 5 reported to hospital. On 25 August 2 more cases were admitted and next day 2 more.

We noticed that 8 of the 9 cases were immigrants from Nyasaland and Tanganyika.

It was decided to apply certain preventive measures immediately. In the meantime the 10th case was admitted on 28 August.

Preventive Measures

Unfortunately, as there was no reserve accommodation in the compound, we could not adopt the method of increasing the cubic space per person, which had proved to be so successful in British Army barracks [2] in combating epidemics. The possibility was explored of accommodating all new recruits in special dormitories for a period of 1 month before distribution amongst the general population. This objective proved to be impossible.

Active immunization by the injection of meningococcal vaccines not having proved successful (Bevan's mass administration of vaccines in the Cyprus epidemic in 1938 showed inconclusive results [6]), other measures had to be considered. We resorted to the following prophylactic measures:

(*a*) *Reduction of Immigration.* We strongly recommended that recruits should be temporarily prevented from joining the service of the mine. The mine authorities found they could not do this for about 10 days, because they were under contract to the recruiting companies; but by 5 September the influx of immigrants was considerably reduced, particularly that of tropical Africans.

(*b*) *Prophylactic Sulphonamide.* As the cases were nearly all in members of dormitories that were inhabited by Nyasa or Tanganyika tribesmen, it was presumed that the major source of the infection was meningococcal carriers who belonged to these tribes, which, as already stated, supplied the great majority of recent immigrants.

Since 1940 it has been proved on several occasions that the administration of sulphonamides reduces the carrier state by destroying the meningococci that are harboured in the nasopharynx. Meehan and Merrilees [8] showed that sulphapyridine caused a total disappearance of the carrier state in a certain section of a foundling home in Melbourne where several epidemics had occurred. Painton [9] proved that the administration of 5 g. of sulphadiazine simultaneously to 18,000 troops in an American Army camp immediately terminated an epidemic. Three divided doses were issued within a period of 24 hours. Phair,[10] in a survey in the United States Army discovered that in 2 groups of 100 men the carrier state was 40%; the administration to one group of 1 g. of sulphadiazine twice daily for 3 days

caused a decline of the carrier rate to 1% by the 2nd day after administration while the control group still showed a rate of 48%. A low carrier rate in the 1st group was maintained for 3 weeks, but had increased to 10% in 2 weeks.

We therefore decided to disinfect local carriers by the issue of sulphonamide to each member of tropical tribes (1 g. sulphapyridine twice daily for 3 days). On Friday, Saturday and Sunday, 28, 29 and 30 August respectively, 2 tablets were issued twice daily to each man living in the the 'tropical' rooms. This procedure was carried out under personal supervision. Each miner was required to open his mouth to show whether he had swallowed the tablets and also to open his hands. Each room was visited and the inmates were paraded. Tablets were swallowed under direct observation and the fact noted in a special register; 1,400 tropical Africans received sulphapyridine. The precautions were necessary because a few of the men tried to retain the tablets in their cheeks or hands. After the tablets were placed in the mouth the person was instructed to swallow a cup of water.

This was arduous and monotonous work, especially the night parades in bitterly cold and windy weather. It was undertaken by 4 persons, including ourselves, and was thoroughly performed. Each person supervised the issue to a quarter of the tropical complement.

Only 2 persons complained of unpleasant symptoms that might be ascribed to the sulphapyridine, one of nausea and vomiting and the other of burning on micturition.

This same dosage of sulphonamide was administered to the distributors of tablets. It was presumed that this would confer temporary immunity which would give protection while they were in close contact with tropical Natives, who were being paraded twice daily in their dormitories.

Sulphapyridine tablets, 1½ g. twice daily for 2 days, were also issued to all recruits who entered the mine during the following week.

(*c*) *Household Dust.* All sweeping of rooms was cancelled for 5 days. The objective was, as a temporary measure, to prevent dust dissemination from the floor that may have been contaminated by the sputum and respiratory droplets of carriers. Subsequently only wet sweeping methods were allowed. All dormitories occupied by tropical Africans were sprayed with 10% formalin by means of a stirrup pump.

The men were also advised to remain outside of their rooms as much as possible, but this was difficult after 4 p.m. because of inclement weather. They were also advised about the danger of spitting on the floors of their rooms. During the day, while the majority were at work, the windows were kept open to increase ventilation.

(*d*) *Isolation of Cases.* All cases of cerebro-spinal fever were isolated in the hospital for 2 weeks.

Further History of Epidemic

On 31 August (the day after the issue of sulphapyridine) a case of meningitis was diagnosed. However, his cerebrospinal fluid was clear and not under pressure, there was a slight increase of cells, and he was considered to be an abortive case. He was a non-tropical. No cases of meningitis were observed during the following week, and the epidemic seemed to have ceased, but on 8 September a patient (the 12th) was admitted. Three days later another tropical African was diagnosed as a case.

The epidemic was now resurrected, because further cases occurred on 11, 15, 16, 18 and 19 September respectively.

An epidemiological map of the compound, on which each case was plotted as it was confirmed, showed that all the recent patients had been admitted from the northern side of the compound, and that no cases had occurred in dormitories on the western part of the perimeter. However, more recruits had been housed in this area than in the other dormitories. A south-westerly wind was continuously blowing dust across the courtyard of the cantonment, and mainly into the rooms on the northern part of the perimeter. We presumed that the increase of dust, together with the greater entrance of recruits into these dormitories, was the cause of the increased incidence of meningitis in this quarter. The dust, probably contaminated with meningococci by sputum and respiratory droplets from carriers, was disseminated by the movements of the inmates and inhaled.

We decided to continuously water the non-grassed areas of the compound, more particularly the belt in front of the rooms. This was continued for 6 weeks, and millions of gallons of water were used. It reduced the amount of air-borne dust considerably.

The north-western perimeter rooms that were mainly affected at this stage were once again the Nyasa and Tanganyika dormitories.

On Sunday, 20 September, 350 tropical Natives from this area were injected with penicillin in oil (300,000 u.) in a further attempt to disinfect carriers. Two days later another 250 tropicals were injected at random when paraded for weighing.

Final Phase

Another 5 cases (making up the total of 22) occurred at gradually increasing intervals of 4, 5, 6, 7 and 12 days respectively until 23 October, when the epidemic ceased. The 21st case was fatal. The weather became much warmer from about 20 September and the rains commenced towards the end of October.

Fig. 1 shows the distribution of cases in the dormitories, and Fig. 2 the weekly incidence of cases.

Bacteriological Investigations

All cases were diagnosed by examination of cerebrospinal fluid. The organisms were observed on direct stained smears or, in the majority of cases, after culturing the cerebrospinal fluid on blood-agar in the hospital laboratory. It was found that, when the meningococci were scanty, it was preferable to incubate the cerebrospinal fluid in blood-broth for 12 hours and then plate on blood-agar and incubate at 37°C for 12 hours, when colonies were easily discerned.

There were no local facilities for carrying out serological or fermentation tests, and transport to the South African Institute for Medical Research, Johannesburg, was only occasionally available. However, on 3 occasions nasopharyngeal swabs from contacts were plated on

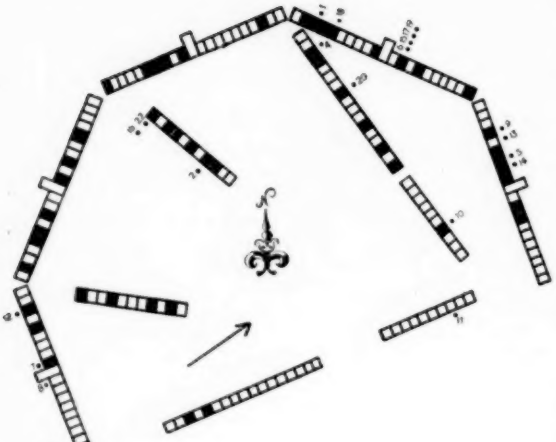

Fig. 1. Compound of St. Helena gold mine: distribution of meningitis cases. Approx. scale 1 inch=350 feet.

Rooms blacked in are dormitories of tropical Africans; the great majority of recruits were accommodated in these rooms.

Each black dot indicates a case of meningitis in the adjoining room. The numerals denote the sequence of cases according to admission to hospital.

The arrows represent the direction of prevailing S.W. wind.

The diagram shows the greater incidence of meningitis in the N.E. sector of the compound.

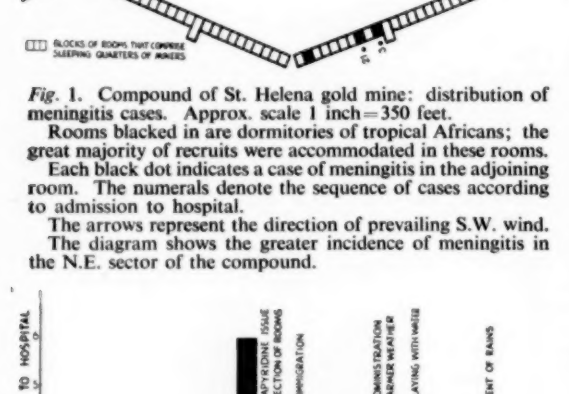
MENINGITIS CASES ADMITTED TO HOSPITAL
SULPHAPYRIDINE ISSUE DISINFECTION OF ROOMS
REDUCTION OF IMMIGRATION
PENICILLIN ADMINISTRATION ONSET OF WARMER WEATHER
DUST LAYING WITH WATER
COMMENCEMENT OF RAINS
2
JULY 25 AUG 1 8 15 22 29 SEPT 5 12 19 26 OCT 3 10 17 24

Fig. 2. Weekly incidence of cases.

blood-agar and the plates after incubation were sent to the Institute by motor vehicle (during transport they were not incubated). In this way cultures of swabs taken from 50 room-contacts were examined by the Institute. In all of these the Institute reported that no meningococci were isolated. The 3 occasions were as follows:

(i) In September nasopharyngeal swabs were taken from 17 contacts of case 8. This was done 1 week after the patient had been removed to hospital, and after sulphapyridine tablets had been distributed. The swabs were plated on blood-agar and after incubation for 12 hours the plates were sent to the Institute. No meningococci were isolated.

(ii) It had been observed that 4 cases of meningitis had been admitted from a certain dormitory. All inmates (16) of the room were swabbed and cultures made. On direct observation of the colonies, 2 persons out of the 16 were found to harbour organisms which according to morphology and staining characteristics were meningococci. However the Institute reported that meningococci were not isolated.

(iii) After the fatal case in October all inmates (17) of the patient's room were swabbed, and culturing was performed and the plates sent to the Institute.

Clinical Features

Of the 2 deaths (the 1st case and the 21st) the first was in a case which developed haemoglobinuria and fatal uraemia. The cause of this was probably the toxic action of sulphapyridine, by which haemolysis of the red cells occurred. The second was a case of fulminating meningitis of the encephalitic type. He died within 3 hours of admission.

Patients were treated with sulphapyridine, 2 g. stat. and 1 g. 4-hourly, by intramuscular injections for 36 hours and then orally for 3½ days more. Penicillin, 100,000 u. in 3 c.c. of distilled water, was injected intrathecally when the diagnostic lumbar puncture was performed. Pyrexia was relieved after an average interval of 72 hours. One case developed septic arthritis of the right knee. No cases of meningococcal septicaemia were observed. The recovery of the remainder was uneventful and after isolation for 14 days they were discharged.

General Observations

Racial Distribution. Eighteen of the 22 patients were tropical Natives (14 Nyasa and 4 Tanganyika). The others were 2 Xhosa and 2 Basuto.

Geographical Distribution. Eighteen dormitory rooms were affected out of a total of 230 rooms. Fourteen of these rooms were occupied by tropical Natives. The total number of 'tropical' dormitories is 57. Thus 25% of their rooms were affected.

Most of the persons who suffered from the illness were not room-contacts of actual cases of meningitis. However, in one dormitory there were 4 cases amongst the inmates and in another room 2. In 8 instances adjoining sleeping quarters were affected.

Three of the 4 non-tropical sufferers were housed in rooms adjoining those occupied by tropical Africans where meningitis had occurred.

In the earlier part of the epidemic, cases were irregularly distributed in various parts of the compound. The latter half of the epidemic displayed a much greater concentration in the north-eastern sector.

Meningitis is essentially a disease that spreads by close contact in dormitories. This factor increases the opportunities for droplet infection. Although employees are housed according to their tribal origin, working gangs both on the surface and underground consist of members of several tribes. Therefore the fact that the infection was confined mainly to tropical Natives, suggests that the infection was contracted in their sleeping quarters

and not at their working places, where in fact contact was not so close.

This observation does not however prove where infection was contracted, for the health records of the gold-mining industry over several years show a higher incidence of meningitis in tropical Africans.

Period of Residence. The majority of the meningitis sufferers were recent immigrants. The average duration of residence before the illness was contracted was 70 days. The average time that each mine worker spends on the mine is 270 days. Eleven of the patients had been employed for less than 30 days. Ten cases were recruits who had arrived during the epidemic.

Temporary Protection. Three Natives developed meningitis in spite of the fact that sulphapyridine was administered to them at the end of August, and 2 although they had received both sulphapyridine at the end of August and penicillin 3 weeks later. Only 3 persons who had commenced work after sulphapyridine was administered *en masse*, developed cerebrospinal fever.

These internal antiseptics had only a temporary effect in protecting persons or in removing meningococci from the nasopharynx of carriers.

Contemporary Epidemics

Epidemics of cerebrospinal fever were also present on several of the neighbouring mines. They were receiving recruits from the same recruiting depots as the St. Helena gold mine. It is quite possible that a fair proportion of the recruits were already carriers before arrival on the property. They had travelled from territories that are 1,500-2,000 miles north of St. Helena. During their journey southwards they had been housed temporarily in several depots and had the opportunity to develop into carriers. For this reason our recruits differed from those who entered the British Army, because the latter proceeded straight from their homes to the army barracks.

COMMENTS

The epidemiology of meningitis was not understood until Glover [3] performed his epic work in the British Army during the First World War. He proved that infection by the meningococcus was primarily one of the nasopharynx. Some of the infected persons showed signs of catarrh and sore throat, while others were quite asymptomatic. These were the carriers. It is only in a small minority of infected hosts that the meningococci break through the barriers of the nasopharynx, invade the blood stream, and attack the central nervous system.[7]

The epidemiology of meningitis in this respect resembles that of poliomyelitis, yellow fever and bacillary dysentery and is in marked contrast to that of smallpox and measles.

The factors that influence the breakdown of the nasopharyngeal barrier and the invasion of the blood by meningococci are largely associated with individual susceptibility.[7] Increased susceptibility results from upper respiratory infections and is promoted by close association of humans who are not accustomed to such conditions.

The large influx of recruits reduced the general herd immunity at St. Helena and the epidemic increased while the influx continued. This is in accordance with Greenwood's epidemiological experiments carried out on mice.[4]

It will be seen from the map of compound rooms (Fig. 1) that where recruits went in meningitis broke out. Tropical Africans were mainly afflicted because the great majority of immigrants came from tropical regions, and also because these people are more susceptible to cerebrospinal fever.

As stated above, only 50 room-contacts of cases of cerebrospinal fever were submitted to nasopharyngeal swabbing and subsequent culturing. The blood-agar plates were examined at the South African Institute for Medical Research and no meningococci were isolated. Possibly meningococcal colonies died out *en route*, because the plates were not incubated during the journey of 6 hours. No conclusion about the carrier rate can be drawn from this small sample of the population.

After the mass administration of sulphapyridine to the affected section of the labour complement there was a marked fall in the incidence of the disease for a period of 2 weeks. During this time weather conditions were still cold and immigration continued at a high rate. It is therefore assumed that the remaining factor (sulphapyridine administration) caused a decline in the epidemic.

When the epidemic became resurrected in the 3rd week of September penicillin was administered, on the presumption that it would also have an effect in eradicating the carrier state. It will be seen from Fig. 2 that a decline in case incidence followed this action. However, weather conditions had become warmer and immigration had been considerably reduced at this stage. It is thus difficult to assess the effect of the penicillin administration. We are, however, of the opinion that it was in part the cause of the sudden reduction of incidence at this stage.

Lack of reserve accommodation prevented us from reducing the number of persons in each dormitory and thereby increasing the cubic space for each inhabitant. We were thus deprived of a most important preventive weapon.

The curtailment of immigration had no immediate effect; for the incidence of the disease increased again 10 days after the adoption of this procedure. There is nevertheless little doubt that the restriction had a long-term effect in causing the ultimate decline of the epidemic.

It is difficult to assess the results of the general hygienic operations of wet sweeping, disinfection of rooms, and dust-laying. The onset of warmer weather and summer rains would, in the natural course of events, have eventually terminated the epidemic by virtue of the greater amount of outdoor life led by the inhabitants and the dust-laying effect of rain. Meningitis, in contrast to the ancient Roman legions, carries out its campaigns in winter and then goes into summer quarters.[5]

The case mortality rate in cerebrospinal fever, under the best conditions that modern treatment can offer, varies between 5% and 10%. Preventive measures are therefore imperative.

SUMMARY

An outbreak of cerebrospinal fever (22 cases) in a semi-closed community is described.

Large-scale immigration of recruits was the main precipitating factor in causing the outbreak.

The majority of sufferers were new recruits.

Mass administration of sulphapyridine to affected elements of the population resulted in a marked but temporary decrease of the dimensions of the outbreak.

Mass administration of penicillin to inhabitants of one area of the compound, where the epidemic had become localized, was followed by a further decrease in the incidence of the disease.

Other preventive measures consisted of restriction of immigration, disinfection and wet sweeping of rooms, dust-laying by means of water, and isolation of cases.

Owing to lack of reserve accommodation, the cubic space per head could not be increased.

The epidemic occurred during the dry cold season. No further cases were observed after 23 October soon after the onset of summer rains.

We wish to record our thanks to Dr. K. Sartorius, Chief Medical Officer of Union Corporation, for his advice on preventive measures and for his permission to publish this report, and to the members of the Bacteriology Department of the South African Institute for Medical Research, Johannesburg, for the investigations they performed.

We also wish to express our appreciation for the help and co-operation that we received from Mr. D. Venables (compound manager) and Mr. J. Kotze (of the compound staff), who organized the mass administration of sulphapyridine, and from Mr. D. Harebottle (hospital superintendent), Mr. P. Malherbe (ambulance officer) and Mr. H. van Rensburg, who helped in the distribution of sulphapyridine and penicillin.

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DIE VERBETERING VAN VERSTOORDE SPIERFUNKSIE

A. OBHOLZER

Diskobolos, Kimberley

As daar niks verkeerd is met die spiersenuwee-eenheid nie en 'n mens wil maar net nog 'n beter spierfunksie kry om 'n sekere prestasie te verhoog, dan geld die volgende vier punte:

1. Spiere word net deur oefeninge opgebou.
2. Oefeninge moet inspannend wees.
3. Vir spesiale take moet die spierfunksie spesiaal opgebou word.
4. Daar is sekere faktore wat spierfunksie vergemaklik.

Dit geld vir die onverstoorde toestand. Nou kan ons egter die volgende vraag vra: Hoe kan 'n verstoorde spierfunksie verbeter word? Is dieselfde beginsels hier van toepassing soos vir die onverstoorde spierfunksie?

Verstoorde Spierfunksie. Spierfunksie kan verstoor wees omdat daar òf met die spier self iets verkeerd is (soos bv. by 'n spierletsel), òf met die spier se innervasie fout is (soos bv. by motorneuron-letsels). In hierdie gevalle is die spierfunksie in vergelyking met die normale min of meer verswak, of selfs heeltemal afwesig. Maar dan kan dit ook gebeur dat eintlik nòg met die spier nòg met sy innervasie iets verkeerd is en tog mag die spier kragteloos word. Dit is die geval as die spier se funksie opgehef word, of met ander woorde, as hy nie gebruik word nie. So iets gebeur as jy jou been breek en die beseerde ledemaat moet nou vir 'n lang tyd in gips stil gehou word, of selfs as jy net vir 'n geruime tyd noodgedwonge stil in die bed moet lê. Dan krimp die spiere wat nie kon werk nie (Inaktiwiteitsatrofie).

Dit kan ook gebeur dat die werk van die hoofspier (protagonis) deur 'n naburige spier wat gewoonlik slegs saamwerk (sinergis) oorgeneem word, sodat die hoofspier die werk nie meer hoef te doen nie. (Fig. 1). Ook in hierdie geval word hy swak. 'n Beweging sonder die hoofspier se leierskap word ‚vervangbeweging' (*trick*

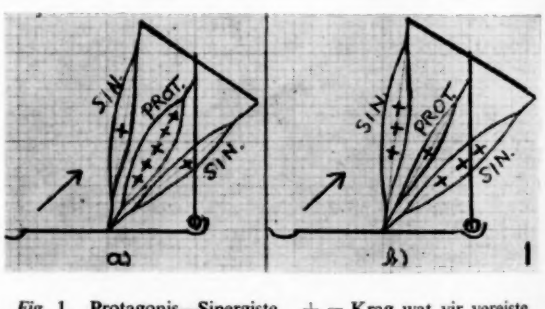

Fig. 1. Protagonis—Sinergiste. + = Krag wat vir vereiste beweging gebruik word, bv. 2 lb. per +. (*a*) Normaal. (*b*) Verstoord.

movement) genoem. Ons kry dit ná kinderverlamming dikwels genoeg. Dit kan ook gebeur dat 'n teëwerker (antagonis) so oormatig sterk word, dat die hoofspier geen kans meer het nie, en dus tou opgooi. So iets kry ons partykeer by spastiese antagoniste, sonder dat die protagoniste juis primêr baie verswak is. Dit is 'n soort van flaksiditeit (*flaccidity*). Ook by gedurige oorrekking van 'n spier word die spier swak, want sametrekking word daardeur onmoontlik gemaak.

Daar kan ook met die metabolisme van die spier selfs iets verkeerd wees. Dit is die geval by pseudohipertro-

fiese muskulêre distrofie. So 'n spier mag heel dik en kragtig lyk en tog is hy swak.

In geval van 'n letsel aan die hoër motorneuron mag die spierfunksie heel in die war wees, alhoewel daar met die spier self en ook met die rugmurg niks verkeerd is nie. By 'n letsel aan die laer motorneuron, soos in die geval van kinderverlamming, waar die voorste horingselle aangetas is, is die kort refleksboog ook uitgeskakel en sal die spier dus gou verslap en in 'n toestand van verlamming kom, aangesien daar nie meer prikkels is wat dit nog kan bereik nie.

(As ons van verlamming praat, dan behoort ons eintlik 'n verskil te maak tussen 'n totale verlamming of ‚paraliese' en 'n gedeeltelike verlamming of ‚parese'. As 'n mens van 'n slappe paraliese lees, dan word gewoonlik 'n totale verlamming bedoel, waar die betrokke spier dan glad nie meer met sametrekking op direkte senuweeprikkels reageer nie. Maar dit mag wel gebeur dat 'n sametrekking deur spieëlsinkinese [25] en deur kettingsinergieë [24] nog uitgelok kan word. By 'n spastiese paraliese kan 'n mens eintlik nie meer van 'n totale verlamming praat nie, want die spier reageer wel nog op senuweeprikkels met 'n sametrekking, ja, hulle reageer daarop nog sterker as normale spiere; maar hulle doen nie juis wat jy wil hê dat hulle moet doen nie.)

In hoeverre is die beginsels vir verbetering van onverstoorde spierfunksie van toepassing op die ‚patologie' van beweging, met ander woorde op verstoorde spierfunksie, soos hierbo uiteengesit? Hier moet ons weer sê:

1. SPIERE (SPIERFUNKSIE) WORD, AL IS HULLE VERSTOOR, NET DEUR OEFENING OPGEBOU

‚Funksie bou die orgaan op', of dit nou verstoor is of nie. Met ander woorde, die spier moet self aktief saamtrek. Passiewe oefeninge sal van geen essensiële waarde wees nie .... en hierdie feit kan nie sterk genoeg beklemtoon word nie. Ook massage sal die spierfunksie nie herstel nie. As die spierfunksie totaal afwesig is of baie, baie swak is, mag in sekere gevalle elektriese prikkeling die eerste bietjie doen om die spier tot die gewenste aktiewe, willekeurige sametrekking te beweeg. Maar ons behoort in gedagte te hou wat H. J. Seddon in sy artikel *The pathology of lower-motor-neuron disturbance in relation to treatment* skryf:[1]

‚As 'n spier gedenerveer is, dan bly hy so, en dus sal pogings om volume deur galvaniese prikkeling te behou 'n tydverkwisting wees. As 'n spier, of 'n deel daarvan, begin herstel, dan is sy aksonale verbindings onaangetas en dus is galvaniese prikkeling onnodig. Hierdie vorm van behandeling het geen plek in kinderverlamming nie.' Dit is 'n ekstremistiese beskouing, maar tog ....

By verstorings van die hoër motorneuron, bv. by 'n slap-spastiese sindroom van serebrale oorsprong, sal elektriese stimulasie gewoonlik niks help nie. Die opbou van spierfunksie moet aktief deur willekeurige sametrekking van spiere geskied. In sulke gevalle word die eerste bewegings waarskynlik slegs deur òf kettingsinergieë òf deur spieëlsinkinese uitgelok. Kettingsinergieë beteken hier 'n onwillekeurige samewerking van 'n hele spiergroep in een rigting, bv. 'n gesamentlike strekking van die arm vorentoe .... (om 'n appel te vat). Spieëlsinkinese beteken 'n onwillekeurige sametrekking van 'n verstoorde spiergroep van een ekstremiteit deur willekeurige kragtige sametrekking van dieselfde spiergroep aan die ekstremiteit van die ander sy van die liggaam. Hierdie eerste dwangbewegings gaan later geleidelik in meer willekeurige en meer gelokaliseerde bewegings oor. As, by kinderverlamming, in die begin die willekeurige innervasie deur elektriese prikkeling ondersteun word, moet dit geleidelik oorskakel na 'n suiwer willekeurige spiersametrekking sonder enige elektriese invloed van buite.

2. OEFENINGE MOET INSPANNEND WEES

Dit raak die wil. By kinderverlamming en by serebrale flaksiditeit speel die wil om 'n spier so ver te kry dat dit saamtrek 'n essensiële rol. As daardie besliste wil nie teenwoordig is nie, sal die spierfunksie nie bra verbeter kan word nie. Dit is dikwels die geval met kinders wat 'n lae I.K. het. Daar is wetenskaplikes wat glo dat dit die wilsimpulse, wat deur die brein uitgestuur word, is, wat die neiging tot herstel versterk en wat bv. in gevalle van kinderverlamming die voorste horingselle feitlik dwing om hulle uitsprietende neuriete vinniger en sterker vorentoe te skuif, as wat dit sonder daardie *vis a tergo* sou gebeur. Die pasiënte moet dus oor en oor probeer om stelselmatig en met die grootste moontlike wilsinspanning die verlamde spier tot aktiviteit te kry. 'Waar daar 'n wil is, daar is 'n weg'—'n neurale weg.

Oefeninge moet inspannend wees. Net inspannende werk gee die nodige prikkel om die funksie van 'n orgaan te verbeter. Dit is ook so by die patologie van beweging. 'n Te stadige verhoging van inspanning is vir die verbetering van spierfunksie nie doeltreffend nie. As die verhoging van inspanning gering is (lae drumpelwaarde), dan word dit glad nie deur die organisme ‚gevoel' nie, of ten minste doen die orgaan nie die moeite om so 'n klein prikkel te beantwoord deur hom by die nuwe en groter vereistes aan te pas nie. Die verhoging moet betreklik groot wees en ook hier moet ons met prikkelstote werk. Die prikkels behoort kort, maar intensief te wees, maar daar moet weer ruspouses vir herstel tussenin wees.

Hierdie is 'n beginsel wat tot nadeel van die pasiënte dikwels verontagsaam word. So word bv. 'n pasiënt aangesê om sy arm te buig en te strek. Hy doen dit vir tien minute—so 'n bietjie buig en 'n bietjie strek. Daardeur sal sy funksie nouliks verbeter kan word. Maar dit sal wel verbeter as die pasiënt 'n gewig wat naasteby maksimaal vir hom is, sê tien keer deur volle buiging en volle strekking van die arm (totale bewegingspan) beweeg .... daarna pouse .... daarna weer dieselfde soos tevore, of met klein veranderinkies, waarvan ons later nog sal praat. (Fig. 2). In elke geval is dit noodsaaklik dat daar indiwidueel sterk weerstand teen 'n sekere beweging uitgeoefen moet word. Hierdie weerstand kan kom deur 'n gewig van buite, of deur weerstand wat deur 'n terapeut verskaf word ens.; maar dit kan ook slegs deur die gewig van die bewegende liggaamsdeel self geskied.

Krusen, 'n vooraanstaande Amerikaanse deskundige op hierdie gebied beveel aan[2] ‚Oefening van 'n spier behoort al die krag te verg, wat die spier moontlik kan gee, sonder om buitengewone vermoeidheid te veroorsaak.' Ook 'n ander wêreldoutoriteit van fisiese medisyne, Kraus, is teen vermoeidheid gekant. Hy skryf[3] ‚Kragopbouende oefeninge behoort in meeste gevalle onderkant die

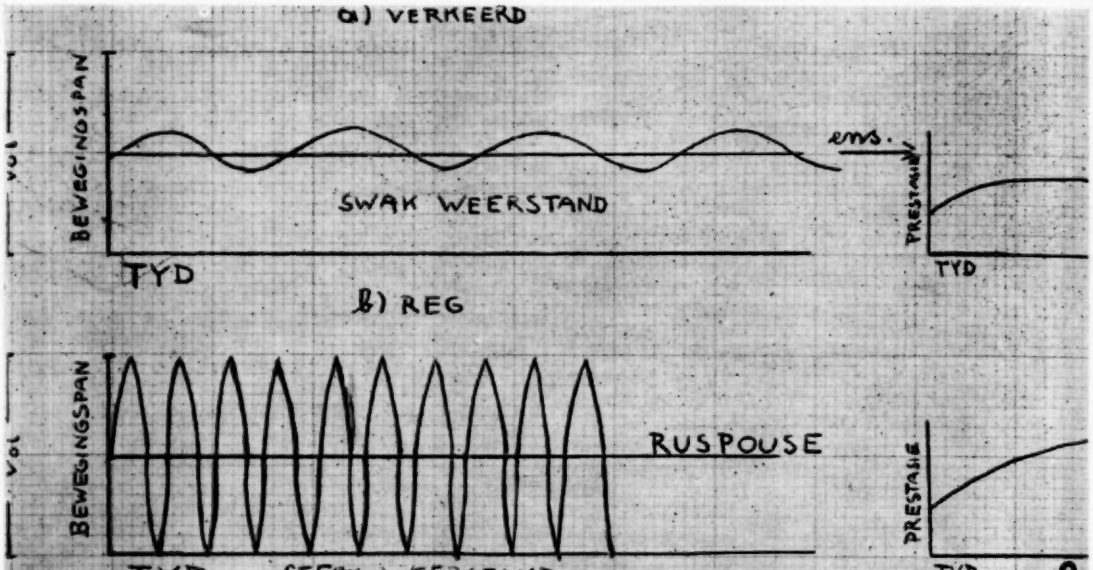

Fig. 2. Oefening. (*a*) Verkeerd. (*b*) Reg.

grens van vermoeidheid te bly.' En in die algemeen kry ons die beskouing dat, veral in kinderverlamming, vermoeidheid vermy moet word. Maar daar is 'n ander rigting, gelei deur ene dr. H. Kabat, mediese direkteur van die *Kabat-Kaiser Institutes for Rehabilitation* in V.S.A. Kabat en sy skool stem nie juis saam met hierdie konvensionele sagte behandeling nie. Hy beveel maksimale werk aan.

F. H. Ewerhardt [4] aan die ander kant skryf: 'n ‚Spiergroep wat sterker gemaak moet word, behoort aan die begin van *training* nie die maksimale las te dra nie. Die vermoë om te werk is groter, wanneer die spier nooit tot die uiterste toe ingespan word nie.' Hier kry ons nog 'n spesiale waarskuwing, wat wel in aanmerking geneem moet word: ‚omdat dit van groot betekenis is om teen uitputting te waak, behoort spesiale aandag aan die volgende punte gegee te word:

Oefeninge mag tot op die punt van vermoeidheid gedoen word;

Hoe groter die hoeveelheid sametrekkings, hoe vinniger tree vermoeidheid in;

Hoe meer volledig die uitputting—geestelik of muskulêr—hoe langer is die periode wat vir herstel nodig is;

Hoe meer ingewikkeld die denkproses wat vir 'n prestasie nodig is, hoe vinniger tree vermoeidheid in.'

Besonder versigtig, miskien oorversigtig, word daar gewoonlik in gevalle van kinderverlamming gewerk. Daar is die gewone prosedure nl. 'n stadige opbou vanaf passiewe bewegings na aktiewe ondersteunde werk met swaartekrag uitgeskakel ens.

So lees ons bv. by Krusen [5] oor oefeninge in die nabehandeling van kinderverlamming: ‚Voorkom vermoeidheid en deformiteite in die tweede stadium. By die eerste tekens van vermoeidheid (aangedui deur vertraging van spiersametrekking) hou op met oefen.' (Vergelyk daarenteen die progressiewe weerstandsoefeninge wat later beskryf word.) Hier word nou die indruk geskep dat vermoeidheid outomaties deformiteite teweegbring.

Soos reeds hierbo aangedui, is Kabat 'n geheel ander mening toegedaan. Hy is 'n voorstander van maksimale werkvereistes. Maksimaal beteken hier die gewig (weerstand), wat 'n sametrekkende spier net-net kan oorkom. Ons lees by Kabat en Knott:[6] ‚Alleenlik na toepassing van 'n maksimale weerstand sal 'n groot hoeveelheid motoriese eenhede reageer.' Dit geld ook vir kinderverlamming, want—volgens Ralston—[7] ‚Swak spierinspanning prikkel maar slegs 'n paar motoriese eenhede, maar intensiewe inspanning mag al die motoriese eenhede prikkel.'

(Wat is 'n motoriese eenheid? Dit is 'n span wat bestaan uit die motoriese neuron en die groep spiervesels wat deur hom geïnnerveer word. Dus sal 'n enkele motorneuron, wat vertak nadat dit die spier raak, miskien honderde en meer spiervesels innerveer. Die graad van die reaksie, wat 'n willekeurige spier op 'n prikkel van sy senuwee gee, verander volgens die getal spiervesels wat geprikkel word en volgens die spoed van die prikkel. Hoe meer motoriese eenhede aktief is, en hoe groter die spoed van prikkeling, hoe sterker sal die spier reageer.)

Afgesien van die weerstand is die opbou van spierkrag ook afhanklik van die bewegingspan (*amplitude of movement*). Dikwels sien mens by behandeling dat net die eerste helfte van die beweging uitgevoer word, maar nie ook die tweede helfte nie. By Bumke-Foerster [8] lees ons i.v.m. versterking van paralitiese spiere:

‚Die versterking van 'n spier kan deur niks anders so seker bereik word as deur stelselmatige werking van die spier nie. Die aktiewe bewegingsoefeninge, wat daarvoor gebruik word, moet volgens 'n sekere beginsel uitgevoer word, wat volgens die wet van Roux, Wolff en Willy Lange opgestel is. Aanwins van spierkrag—en amper altyd daarmee verbonde 'n verdikking (hipertrofie) van die spier—word nie so seer daardeur bereik, dat 'n spier dikwels en aanmekaar met 'n sekere persentasie van sy maksimale prestasievermoë moet werk nie, maar veral deur dat die maksimale prestasie in 'n kort tydperk bereik word en dat daarop 'n langer ruspouse volg: dus vinnig aflopende maksimale sametrekkings met 'n daaropvolgende maksimale ontspanning. In die praktyk beteken dit dat die pasiënt 'n paar keer die vereiste beweging tot die grootste moontlike bewegingspan en met die grootste graad van weerstand wat die grootste moontlike bewegingspan by 'n vinnige bewegingsafloop nog toelaat, uitvoer. Hierdie hoogste prestasie moet herhaal word, maar net as daar 'n ruspouse wat lank genoeg is daartussen lê. Volgens hierdie grondslag kan eenvoudige weerstandsbewegings, oefeninge aan ortopediese apparate, aan gimnastiektoestelle,

oefeninge met weerstand deur gewigte, vere en dergelike met welslae uitgevoer word.'

In 'n drukbesige fisioterapieafdeling van 'n groot hospitaal speel tydsbesparing 'n belangrike rol. Daar word dus gevra: ‚Op watter manier kan ons in die kortste tyd die optimum van spierfunksie opbou?' As 'n antwoord daarop het ene De Lorme (1945, 1948) [9] sy *heavy resistance exercise*, en daarna De Lorme en Watkins (1948) [10] hulle *progressive resistance exercise* uitgevind en goeie sukses behaal. Daar was nie alleen by suiwer spierverstorings goeie vordering vasgestel nie, maar ook by neuromuskulêre verstorings soos ons dit na afloop van kinderverlamming kry.[11] De Lorme het in 1946 eers van 7 tot 10 reekse van 10 herhalings, dus tussen 70 en 100 herhalings toegepas, maar later uitgevind, dat met minder herhalings maar met groter weerstand beter uitslae bereik kan word.

Daarna het De Lorme en Watkins [12] in 1948 die volgende verbeterde oefenskema voorgestel: Eers 10 herhalings van die helfte weerstand van wat maksimaal by 10 herhalings gedoen kan word—vir opwarm; daarna 10 herhalings met ¾ van die maksimale weerstand; en ten einde 10 herhalings met maksimale weerstand: altesaam 30 herhalings. Op dié manier word die oefeninge met stygende weerstand gedoen. (Maksimale weerstand beteken hier die grootste gewig wat 10 keer agtermekaar suiwer gelig kan word, en dit deur 'n volle bewegingspan.[12] Die gewig kan, as die spier te swak is,

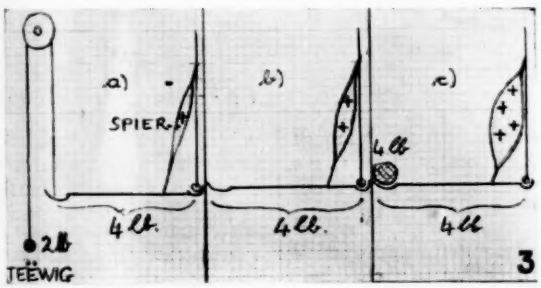

Fig. 3. ‚Maksimale' weerstand. + = Potensiële maksimale krag van 2 lb. per +. Prestasie: (*a*) = 2 lb., (*d*) = 4 lb., (*c*) = 8 lb.

kleiner wees as die gewig van die betrokke lid wat beweeg word. In hierdie geval moet 'n teëgewig aangesit word. Dit word teëwigting (*counterbalancing*) genoem. (Fig. 3.) De Lorme, Schwab en Watkins [11] (1948) het een herhaling maksimum en 10 herhalings maksimum een keer elke week vasgestel.)

Mead [13] (1950) het toe die volgende voorgestel: 20 herhalings met ligte gewig vir opwarm; daarna 10 herhalings met maksimale weerstand: altesaam 30 herhalings.

Omdat sommige kinderverlammingspasiënte gou moeg word, omdat die drumpelwaarde van hulle vermoeidheid verlaag is, kan hulle dikwels die 30 herhalings van die *progressive resistance exercise* òf nie goed òf glad nie doen nie. Daarom het ene Zinovieff [14] (1950) hierdie prosedure gewysig deur die weerstand trapsgewys te verminder, in plaas van dit te vermeerder, soos De Lorme en Watkins dit toegepas het. Hy doen nou: 'n kort periode van opwarm; daarna 100 herhalings van 10 per groep van 10, met rus van 1-2 minute daarentussen, beginnende met 10 herhalings met maksimale weerstand, en daarna met trapsgewys verminderende weerstand. Zinovieff poog om elke dag een pond gewig by te sit. Hierdie prosedure is nog baie lank!

McGovern en Luscombe [15] (1953) het toe die volgende voorgestel: Kort aktiewe opwarm deur die volle bewegingspan, sonder weerstand; daarna 10 maksimale .... een minuut rus .... 10 ¾ maksimale ..... een minuut rus .... 10 ½ maksimale: altesame 30 herhalings.

Indien, soos by McGovern en Luscombe, die maksimale inspanning aan die begin van die oefeninge staan, dan kan al die oefeninge, wat daarop volg, so te sê, ook met maksimale weerstand gedoen word; want bv. terwyl die eerste 10 maksimale herhalings vir die pasiënt al absoluut maksimaal is, is die volgende ¾ maksimale daardeur nou met eens ook (relatief) maksimaal, dat die spiere nou al moeg is en daardeur die prestasievermoë om ¼ gedaal het. Gelykswys is dit dan ook met die daaropvolgende tien, wat met die helfte van die oorspronklike maksimale weerstand gedoen word. Hierdie prosedure neem die normale vermoeidheidskurwe in ag en is, soos hulle outeure sê, die spieëlbeeldelike van De Lorme se oefenskema. (By De Lorme en Watkins word die absolute maksimum weerstand nêrens bereik nie omdat die spiere al vermoeid is as hulle ten einde die tien absolute maksimum moet doen.) (Fig. 4.)

Dit mag nie oor die hoof gesien word, dat hierdie manier van gee van weerstand, dit wil sê 'n weerstand deur gewigte, dié groot voordeel het dat 'n vordering

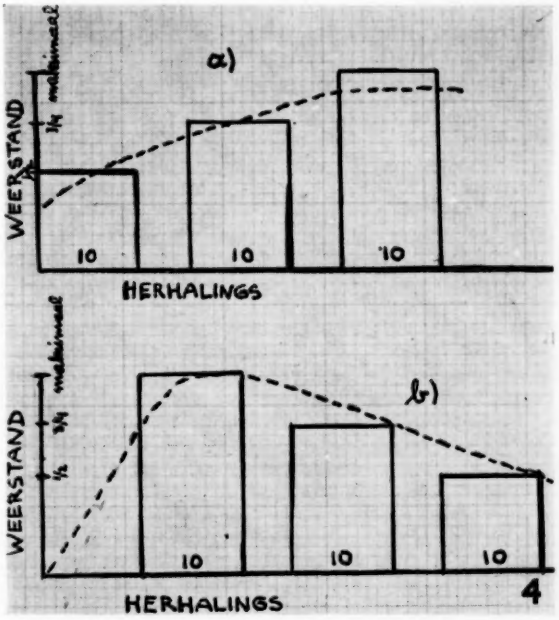

Fig. 4. Weerstand. --- Kurwe van aktuële spierprestasie. (*a*) Stygende weerstand (de Lorme en Watkins, 1948). (*b*) Dalende weerstand (McGovern en Luscombe, 1953).

op die manier maklik meetbaar is nie. Aan die ander kant word so iets maklik meganies. Die manuele weerstand deur die terapeut behoort m.i. darem tog primêr te bly.

Een punt wat selde aangeraak word, is die van langafstandvermoeidheid, hetsy fisies of sielkundig of altwee. Die saak is dit: na 'n aanvanklike vinnige vordering kom daar gewoonlik al na 'n paar weke 'n tyd waar daar geen of maar net 'n heel klein vordering gemaak word. Dikwels sit dan die ywerige fisioterapeut sy oefeninge voort, volgens die leuse: aanhouer wen. Die pasiënt is darem al so moeg van sy oefeninge en moeg vir sy oefeninge dat hy nie meer die nodige energie kan gebruik om die maksimale weerstand te oorkom nie. Dit is al rede genoeg om geen vordering te maak nie. Mead [13] stel nou voor om 'n paar weke van intensiewe daaglikse oefeninge om die beurt te laat afwissel met

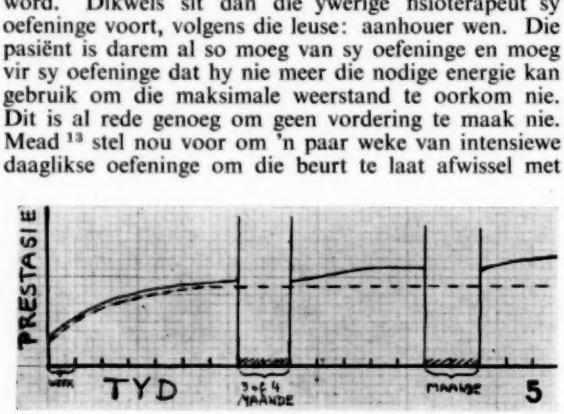

Fig. 5. Oefenmetodes. Kurwe --- wys die gewone ‚aanhouer wen'-metode. Kurwe — wys Mead se nuwe voorstel.

3 of 4 maande van huisaktiwiteite en dit so lank totdat geen vordering meer vasgestel kan word nie. Op dié manier kan die pasiënt na sy terugkoms na die fisioterapeutiese behandeling weer meer weerstand oorkom. (Fig. 5.)

Vir my skyn 'n kombinasie van die stelsels van McGovern en Luscombe met hierdie voorstel van Mead die mees effektiewe te wees.

Interessant is ook die voorstel, gemaak deur Th. Hettinger (1953).[16] Hy het deur eksperimente met gesonde mense gevind dat 'n voldoende prikkel vir die groei van 'n spier gegee is as die spier een keer per dag op $\frac{2}{3}$ van sy maksimale krag aangespan word en in hierdie spanning tussen 10 en 15 sekondes gehou word. En later in 1953 beweer Mueller en Hettinger [17] dat 60 persent van die maksimale krag, gehou vir 6 sekondes, al die optimum beteken. Daar word gesê dat hierdie metode goeie resultate by spiere wat bv. deur 'n amputasie atrofies geword het, lewer.

Daar moet darem gesê word dat die statiese werk soos hierdie net een sy van die opbou van die spierfunksie bevat en dat m.i. die kinetiese werk van 'n nog groter betekenis is as die statiese.

In verband daarmee onthou ek nog 'n geval vanuit my studiejare. Daar was 'n besonder mooi geboude medestudent. Hy was eendag deur 'n beeldhouer gevra om ‚model te staan'. Hierdie statiese werk het dit binne 'n paar weke reg gekry om sekere spiere (hoofsaaklik die deltoid) objektief meetbaar te laat groei.

Daar moet nog 'n spesiale opmerking gemaak word i.v.m. die opbou van 'n swak spier in die slap-spastiese sindroom. Die posisie is gewoonlik dit, dat die een spier òf swak òf ‚dood' (O.C.) is en sy antagonis is spasties. Daar word nou dikwels deur massage of deur ontspanning of deur passiewe oefeninge probeer om die ‚spastiese spier' tot verslapping te bring, sodat die swak spier aan die ander kant 'n kans kry om saam te trek. Maar baie beter as hierdie genoemde maatreëls is die

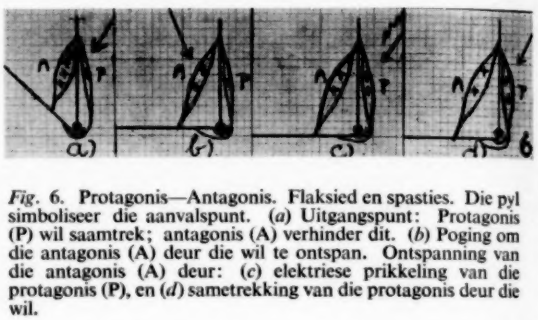

Fig. 6. Protagonis—Antagonis. Flaksied en spasties. Die pyl simboliseer die aanvalspunt. (*a*) Uitgangspunt: Protagonis (P) wil saamtrek; antagonis (A) verhinder dit. (*b*) Poging om die antagonis (A) deur die wil te ontspan. Ontspanning van die antagonis (A) deur: (*c*) elektriese prikkeling van die protagonis (P), en (*d*) sametrekking van die protagonis deur die wil.

poging om die swak spiere teen maksimale weerstand te laat saamtrek; want daarby word reflektories die spastiese antagonis min of meer verslap (Fig. 6). Dit volgens die bekende wet van Sherrington oor die ‚resiproke innervasie'. Daar is nou al mense wat, met die oog op 'n reflektoriese verslapping van die spastiese antagonis, probeer om die swak spier elektries te prikkel.[18]

Hier wil ek ook byvoeg dat by verskillende vorms van serebrale kreupelheid die aandag nie op die werkende spiere gerig behoort te word nie, maar weg van hulle.

Hoe dikwels behoort daar oefeninge gedoen te word?

In hierdie verband skyn almal saam te stem: liewers elke dag maar vir kort periodes as twee keer per week vir lank. Die rede is, dat swak spiere, veral kinderverlammingspiere, baie vinnig vermoei, en dan baat 'n lang oefenperiode niks nie. Hierdie tipe het baie rus tussen die oefenperiodes nodig en dit word beste gedoen deur elke dag te oefen .... maar, soos al gesê, indien moontlik, elke dag 'n paar keer (Kabat). *No half-hearted attempts.*

Oor die intensiteit van behandeling wat wenslik is, kan ons nog baie van die V.S.A. leer. So skryf bv. Kabat en Knott:[19] ‚Intensiewe oefeninge word vir 'n getal ure elke dag uitgevoer, en vermoeidheid word, so ver moontlik, nie in aanmerking geneem nie.' En Knott, Kabat se hoof-fisioterapeut, skryf:[20] ‚die behandelingsprogram bevat die hele dag. Dit bestaan uit intensiewe spieroefeninge vir een of twee ure daagliks, met bykomstige behandeling in die gimnasium, mat-oefeninge, kruk en selfhelp-opleiding en arbeidsterapie.'

3. VIR SPESIALE TAKE MOET DIE SPIERFUNKSIE SPESIAAL OPGEBOU WORD

Ons het al by die bespreking van normales gesê dat vir spesiale take die spiersenuwee-eenheid spesiaal opgebou moet word. So bv. moet 'n spier wat vinnige werk sal moet verrig deur vinnige oefeninge opgebou word en 'n spier wat stadige en sterk werk moet verrig deur stadige

oefeninge met groot weerstand. Hierdie grondslag is ook van toepassing vir die verbetering van patologies verswakte spiere. De Lorme [21] wys daarop dat die skeletspierstelsel die volgende verskillende kwaliteite besit: krag, uithouvermoë, spoed, koördinasie; en dat 'n verskillende tipe oefening benodig is om in 'n spier die kwaliteit te ontwikkel wat wenslik is.

Hier sal ons darem nog nie daaraan dink om te spesialiseer nie, want ons moet eers die alomvattende spierfunksie reg kry. Met ander woorde ons moet eers 'n funksie opbou, wat stadige en vinnige en langdurende en houdende werk bevat. Dit kan dus nog nie ons strewe wees om net 'n spier te ontwikkel wat, soos daarbo (Hettinger) aangedui, net deur stilhou (statiese werk) ontwikkel is, al mag dit vir houdende werk sterker wees en dikker lyk. 'n Spier moet ook in staat wees om van sy langste tot aan sy kortste posisie saam te trek, dit wil sê die bewegingspan moet 'n vol een wees. Nou dit moet geoefen word.

Dit wil skyn asof vir die begin 'n kombinasie van hou (statiese werk, isometries), en stadige gelykmatige beweging (kinetiese werk, isotonies) wat die vol bewegingspan bevat, die beste resultate lewer, terwyl spoed en uithouvermoë later trapsgewys opgebou moet word. By Kabat en Knott [22] vind ons 'n aanbeveling vir die volgende prosedure: Hou .... verslap .... aktiewe beweging .... hou ens. in vinnige opeenvolging.

Hier moet ook dadelik bygevoeg word dat die oefeninge nie tot die ‚verswakte spier' alleen behoort beperk te word nie, maar dat dit baie doeltreffender is om die spier as 'n gedeelte van en in verband met die hele spiergroep, wat 'n sekere beweging doen, te behandel.

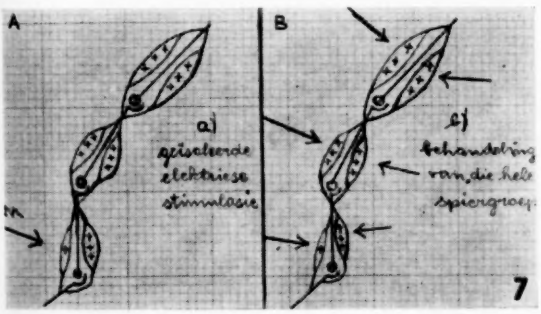

Fig. 7. Behandeling van die spiergroep. → = Aanvalspunt van behandeling. (*a*) Geïsoleerde elektriese stimulasie. (*b*) Behandeling van die hele spiergroep.

Met ander woorde, 'n spier behoort saam met sy sinergieste behandel te word, ja, en ook saam met sy antagoniste, nie sommer los nie (Fig. 7).

Dit gaan so ver, dat bv. by behandeling van 'n tib. ant. ook die dyspiere mee gehandel moet word. By serebrale kreupeles—afgesien van die atetoide [23]—is dit van 'n besonder groot betekenis deur die kettingsinergieë.

4. VERGEMAKLIKING (FACILITATION)

Hierbo het ons al 'n belangrike punt in die opbou van die spierfunksie geraak; ons vind dikwels dat 'n verlamde of verswakte spier baie beter kan werk as hy as 'n deel van 'n gesamentlike, 'n groter beweging—kettingsinergieë—kan werk. 'n Buigspier kan beter werk as die buigers van 'n ekstremiteit saam werk as wanneer hy net alleen en geïsoleerd werk. In die laaste geval sal daar òf geen òf net 'n heel klein reaksie wees en die vordering sal dan ook òf nul òf heel klein wees. Met die strekspiere en ander spiere is dit net so. Hierdie prosedure, wat die sametrekking van spiere vergemaklik, word vergemakliking (*facilitation*) genoem.

Wat is die hoofsaaklikste vergemaklikingsprosedures?

(*a*) Een daarvan is nou die *kettingsinergieë*—in die Engelse literatuur gewoonlik *mass movement pattern* genoem.[24]

(*b*) 'n Ander een is die *spieëlsinkinese*.[25]

(*c*) Ook die *maksimale weerstand*, waarvan ons al gepraat het, is so 'n vergemaklikingsprosedure.

(*d*) *Omkeer van antagoniste*. Dit wil sê dat bv. 'n buiging deur 'n strekking ingelei behoort te word. Dit word darem in die sport en in die praktiese lewe gewoonlik toegepas. Voss, Knott en Kabat skryf:[26] ‚Stadige omkeer gevolg deur herhaalde aktiewe (isotoniese) spiersametrekking in die antagoniste is die tegniek wat gevolg moet word om krag te ontwikkel en ook uithouvermoë dwarsdeur die aktiewe bewegingspan van alle bewegingspatrone. Dit is essensiëel vir 'n volledige funksionele uitslag.'

(*e*) *Spierrekking* .... dit kom eintlik baie ooreen met die omkeer van antagoniste: 'n Plotselinge gerekte spier beantwoord 'n prikkel makliker as 'n verkorte spier.

(*f*) *Reflekse*. (Daarby is die bogenoemde punte uitgesluit.) Hierdie reflekse is afweerreflekse, neckreflekse en andere. Hulle is by serebrale kreupeles van groot betekenis.

Al hierdie vergemaklikingsvoorgange behoort by elke pasiënt eers getoets te word, om te sien of hulle in die behandeling van toepassing kan wees.

Hoe kan vordering objektief vasgestel word?

Objektief kan dit net deur die prestasie gedoen word. Met ander woorde:

(1) jy vergelyk die *weerstand* (gewigte, vere ens.) wat die spiere eers kon oorkom met die weerstand wat hulle nou (kineties en staties, een keer) kan oorkom;

(2) jy vergelyk die *spoed* van tevore en nou (stophorlosie);

(3) jy vergelyk die *bewegingspan* van tevore en nou;

(4) jy vergelyk die *uithouvermoë* van tevore en nou;

(5) jy vergelyk die *vaardighede* wat 'n mens in die daaglikse lewe nodig het (soos stap, eet ens.)

Alte dikwels word die toenemende omvang van die spier as 'n teken vir vordering in spierfunksie beskou. Wel kan daar gesê word dat by gesonde spiere, in die geval van houkrag, die krag van die spier direk proporsioneel is met die volume van die spier; en miskien kan dit tot 'n sekere graad ook by vinnige beweging so gesê word, maar al by aanhoudende werk skiet dit baie tekort. By patologiese toestande is daar nog meer tekortkomings, want dikwels kan jy 'n verbetering van spierfunksie vasstel alhoewel die omvang van die spier nie groter geword het nie, soos bv. by kinderverlammingspiere. Ja, dit gebeur ook, dat, soos in die geval van

pseudohipertrofiese muskulêre distrofie 'n kuitspier deur oefening dunner geword het en tog sy funksie verbeter het.

OPSOMMING

In hierdie artikel word eers uiteengesit waar die tekortkomings lê, as daar verstorings in die spierfunksie is. Daarna word daarop gewys dat die grondslae vir verbetering van *onverstoorde* spierfunksie ook by *verstoorde* spierfunksie van toepassing is. Dus:

1. *Spierfunksie word net deur oefeninge opgebou.* Oefeninge beteken *aktiewe* oefeninge, gestoot deur die wil van die oefenaar. Eerste wegspringplek: Kettingsinergieë en spieëlsinkinese.

2. *Oefeninge moet inspannend wees.* Dit is die geval ook as die spiere baie swak is. Die rol van die totale bewegingspan, maksimale weerstand, rus en herhaling word bespreek en verskillende oefenstelsels word uiteengesit.

3. *Vir spesiale take moet die spierfunksie spesiaal opgebou word.* Die volgende voorstel word gemaak: vir die begin 'n kombinasie van hou (staties, isometries) met stadige beweging (kineties, isotonies) by totale bewegingspan.

4. *Gebruik van vergemaklikingsfaktore vir die spierfunksie.* Die volgende faktore word aanbeveel: kettingsinergieë, spieëlsinkinese, maksimale weerstand, omkeer van antagoniste, spierrekking, en reflekse.

Ten laaste word die vraag beantwoord, hoe vordering *objektief* vasgestel kan word. Antwoord: deur *meet* van weerstand, van spoed van uitvoering, van bewegingspan, van uithouvermoë, en deur vasstel van vaardighede van die daaglikse lewe.

SUMMARY

This article first endeavours to explain the reasons for disturbances in muscular function. Then it is pointed out that the principles applied for improving an *undisturbed* muscular function are also applicable to the treatment of a *disturbed* muscular function; viz.

1. *Muscular function can be built up only by exercises.* Exercises means *active* exercises, pushed by the will of the patient. On commencing, treatment should be based upon chain-synergies and mirror-synkineses.

2. *Exercises must be strenuous.* This is the case even if the muscle is very weak. The importance of the total amplitude of movement, maximal resistance, rest and repetition is stressed, and various systems of exercise are discussed.

3. *For special tasks muscular function must be built up specifically.* On beginning, the following procedure is recommended: Combine hold (static, isometric) with slow movement (kinetic, isotonic), while applying total amplitude of movement.

4. *Some procedures facilitate muscular function.* The following facilitation procedures are recommended: chain-synergies, mirror-synkineses, maximal resistance, reversal of antagonists, muscle stretching, and reflexes.

Finally, in seeking an answer to the question how progress could be assessed *objectively*, the following is submitted: By *measuring* resistance, speed of achievement, amplitude of movement, and endurance, and by recording activities of daily living.

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DISPENSING OF POTENTIALLY HARMFUL DRUGS

The Pharmaceutical Society of South Africa have written to the Medical Association of South Africa referring to two subsections of the Medical, Dental and Pharmacy Act (as amended) which place obligations upon any person dispensing 6th-schedule drugs (potentially harmful drugs):

1. Section 65*bis* (2): 'The seller or supplier of any medicine' (containing any potentially harmful drug)' .... shall enter in the prescription book .... all such particulars as are .... required to be set forth in the prescription' (i.e. date of issue, name and address of patient, name and quantity of the drug supplied, the number of times and the intervals at which the prescription may be dispensed, and the amount and frequency of each dose to be taken).

2. Section 65*bis* (3): 'Any person by whom a prescription' (containing any potentially harmful drug) '.... is dispensed for the last time .... shall retain such prescription for a period of not less than 3 years as from the date on which it is so dispensed for the last time'.

Medical practitioners who dispense are subject to these obligations and should keep their prescription books, or other records of prescriptions, for the time laid down by statute.

MEETING OF MEDICAL COUNCIL IN CAPE TOWN

The South African Medical and Dental Council held its half-yearly meeting on 21-24 March 1955 at the Archives Office, Queen Victoria Street, Cape Town. The President, Prof. S. F. Oosthuizen, was in the chair, and 29 members attended, only one being absent. The Registrar, Mr. W. Impey, was absent on account of illness, and the Acting Registrar, Mr. W. H. Barnard, took his place. The proceedings occupied 8 morning and afternoon sessions.

The Minister of Health, the Hon. J. F. T. Naude, M.P., was present at the opening and addressed the Council.

The resignation was announced of Mr. Justice J. F. Ludorf, one of the members appointed by the Minister, on his elevation to the Bench, and the appointment in his place by the Minister of Adv. J. v. Wyk de Vries, who attended the meeting.

Treasurer's Statement

Prof. te Groen presented the accounts for 1954. The income had exceeded the expenditure by £1,604, which brought the Council's accumulated funds to a total of £20,271. The fees paid during the year by registered persons of all categories amounted to £23,098; medical practitioners' annual fees came to £5,475 and interns' fees to £626.

REGISTRATION

The Registrar submitted the following particulars of registrations, restorations and erasures effected during 1954 and the numbers on the register at the end of the year:

	Registrations	*Restorations*	*Erasures*	*On Register, 31.12.54*
Medical Practitioners	366	62	142	6,723
Interns	313	—	327	505
Dentists	50	10	28	1,110
Medical Students ..	273	6	404	1,158
Dental Students ..	58	—	56	219
Auxiliaries	67	—	1	726
Specialists (medical)	90	3	13	1,155
Specialists (dental)	1	—	—	13

The specialists on the register at the end of 1954 were as follows: medicine 164, surgery 147, obstetrics and gynaecology 101, ophthalmology 93, anaesthetics 91, radiology 65, radiology and electrotherapeutics 39, radiological diagnosis 15, radiotherapy 4, psychiatry 64, otorhinolaryngology 63, pathology 60, paediatrics 56, orthopaedics 44, urology 33, dermatology 28, neurology 24, venereology 18, physical medicine 17, thoracic surgery 15, neurosurgery 9, plastic and maxillo-facial surgery 5. (Dental: orthodontia 8, maxillo-facial and oral surgery 5.)

Of the registered medical practitioners 4,626 (67%) qualified in South Africa (Cape Town 2,080, Witwatersrand 2,007, Pretoria 539), 2,068 (30%) in Great Britain and Ireland (England 972, Scotland 823, Ireland 273), and 202 (3%) elsewhere.

Medical Missionaries. The Council at the present meeting granted 5 applications for the special registration for missionaries and refused 2. One registration was extended for a further period of 5 years. One application for permission to engage in normal civil practice as well was refused.

Erasures from Register. It was decided to remove the names of the following numbers of medical practitioners from the register: 25 at their own request, 10 whose address could not be traced, and 66 (and 7 dentists) who had failed to pay the annual fee.

Elderly Practitioners. A proposal was moved that practitioners over 70 years old should be exempted from payment of the annual fee. An amendment was moved that practitioners not in active practice should be exempted. After discussion the matter was referred to the Executive Committee for consideration. Applications for exemption were in the meantime held in abeyance.

Specialists. At this meeting 40 applications for specialist registration were granted, 16 were approved conditionally, and 11 were refused.

Internship. Applications for exemption from the obligation to serve 12 months' internship, in whole or part, on account of equivalent work performed were granted in 10 cases (1 conditionally) and refused in 1 case.

Applications for the recognition of particular hospitals for the purpose of internship were granted in 4 cases and refused in 1 case.

Auxiliaries. Ten applications for the registration of medical auxiliaries were granted, 2 were approved conditionally and 4 were refused. It was decided to take steps to institute a register of psychologists as medical auxiliaries.

LIMITED RECIPROCITY WITH HOLLAND

At their last meeting (in September 1954) the Council had resolved that limited reciprocity be instituted with the Netherlands. At the present meeting draft regulations to give effect to this were considered and approved and were referred to the Executive Committee for submission to the Governor General for approval and promulgation (after obtaining legal opinion on certain points and consultation with the Netherlands authorities).

The draft provides that a limited number of holders of qualifications accepted in the Netherlands may be registered, the number to be determined every year by the Council, and that the annual list shall be selected by or under the Netherlands minister corresponding to the Union Minister of Health. The persons selected must be Netherlands nationals, they must have passed approved qualifying examinations after a 5 years' course of study, of which the last 3 years must have been taken at a Netherlands university or medical school, and they must have complied with the Council's regulations concerning 12 months' internship.

In anticipation of the promulgation of the regulations the Council proceeded to deliberate on the number of qualified medical practitioners from Holland that should be entered on the register in the first year (1955). After debate and ballot the number determined was twelve (12) and the same number was also fixed for the following year.

COMPLAINTS CONCERNING PRACTITIONERS

Reports were submitted of cases heard by special disciplinary committees or the Executive Committee. In 2 cases the medical practitioners charged were cautioned—(1) for offences in connexion with the importation of habit-forming drugs into Basutoland, (2) for aiding and abetting an unregistered person illegally practising medicine—and in a third case a dentist was reprimanded and cautioned for accepting a professional appointment under written contract in contravention of Ethical Rule 19. In a case in which a medical practitioner was charged with improper conduct the practitioner was found not guilty. One other case had been referred for hearing by a disciplinary committee, but had not yet been heard.

The Executive Committee reported that since the Council's last meeting it had considered 41 other ethical complaints against practitioners, which had been disposed of without a formal hearing; and 16 complaints concerning fees, which had been dealt with by advising the complainants of the procedure to be followed under section 80*bis* of the Act.

In 4 cases under section 80*bis* which had been referred to assessors, the decision of the assessors had been given.

Reports of inquests in which medical practitioners were involved had been referred to the Council and investigated in 4 cases. They had been disposed of without further action.

VARIOUS MATTERS

Registration of Specialists. Members were informed that the Federal Council of the Medical Association had replied to the Council's request for its views on the interpretation of the voting on the questionnaire. The reply was referred to the special committee that the Council had appointed to report on the matter. A copy of the reply would be supplied to each member of the Council.

Composition of Council. A report on this matter from the special committee was considered, particularly from the point of view of the representations made by the Medical Association that the number of members elected by the medical profession should be increased. The Committee advised against any change.

Discussion ensued and a proposal was moved that the number of elected medical members should be increased by 4. The report together with this motion, was referred to the Executive Committee for consideration and report.

Blood Transfusion Services. The Council decided to request the Minister of Health to give consideration to the drawing up, after consultation with the Council, of regulations in regard to blood transfusion services under the Medical, Dental and Pharmacy Act.

Anaesthetics by Nurses. The Council confirmed the action of the Executive Committee in informing the Secretary for Health that they endorsed the resolution of the Federal Council of the Medical Association on the subject of the administration o anaesthetics by nurses and midwives.

Pathological Services in the Transvaal and the 'Farming Out' of Radiologists. The report of the conference which had been called by the Council and had been held in Cape Town on 18 March had been received, and it was decided that it should be submitted to the various bodies concerned before being considered by the Council.

Inspector of Interns. There being now no full-time Inspector of Interns on the Council's staff it was decided to make other arrangements for the conduct of such inspections as should from time to time be deemed necessary. It was also decided to send a memorandum on the subject to the Ministers of Health, Education and Finance expressing the Council's view.

Reference of Cases to Auxiliaries. The Medical Association had referred to the Council a letter from the Ophthalmological Society of South Africa commenting on the decision of the Council (concerning the reference of cases to and from optometrists), which had been reported in this *Journal* of 9 October 1954. The Council made a verbal alteration in its resolution so that it reads: 'A registered medical practitioner may refer a patient in whom no pathological condition is suspected and is over the age of 15 years to an optometrist'. It was also noted that the Council had previously ruled that medical practitioners should, wherever possible, only utilize the services of registered physiotherapists (unless not available), and that the same would apply to medical practitioners availing themselves of the services of any other category of auxiliary.

DECISIONS OF COUNCIL

The following decisions were given in reply to specific enquiries:

Disclosure of Nature of Patient's Illness. If a medical practitioner has the express consent of his patient to divulge information concerning his health to an insurance company (or anyone else) he is covered in terms of Ethical Rule 16. Whether the insurance company may disclose the information to other parties is a matter that does not concern the Council.

Disclosure of Infectious Disease. The Public Health Act 1919 requires medical practitioners to 'notify' cases of certain infectious diseases, and also to 'inform the head of the household or the occupier of the premises and any person nursing or in attendance on the patient of the nature of the disease and the precautions to be taken to prevent its occurrence in others'. A debate ensued on the ethical aspect, and it was resolved that in the opinion of the Council no registered practitioner will be acting unethically if he complies with the provisions of the Public Health Act concerning infectious disease.

Roster for Emergency Treatment. A Branch of the Dental Association proposes to establish a panel of dentists prepared to render emergency treatment at week-ends and public holidays to private patients who cannot get in touch with their own dentists or who have no dentist. The roster on duty will be supplied only to certain hospitals. The Branch asked whether this would constitute advertising. It was decided to inform the Association that the Council had no objection to what they proposed to do.

A doctor in a town where there is no suitable maternity home proposes to send his maternity cases to the maternity block of the hospital *in a neighbouring town* and treat them there. The Council decided that there was nothing wrong in this, provided that the same principle as is contained in Ethical Rule 4 (1) (re itinerant practice) is observed.

South African Who's Who. Medical practitioners may supply this publication with general information concerning their careers provided the matter is not presented in such a manner as to contravene the Council's rules, more particularly those relating to advertising.

Public Reception. A doctor telegraphed 'Location residents preparing reception function for me. Is that equal to advertising?' He was informed that it was very inadvisable.

On Retirement from Hospital Post. A surgeon retiring from a Provincial hospital in accordance with the age limit is in order in circularizing the medical profession with an intimation of this, and adding that he is continuing to conduct his private practice.

Laying Foundation Stone. A doctor is invited to lay the foundation stone of a hospital in a country town; his name would be inscribed on the stone. He was informed that this is permissible.

Book for First-Aiders. A doctor has been asked to write a simple guide in midwifery for first-aiders and enquires whether it may bear his name. The Executive Committee replied that 'it was not happy at what he proposed doing', and raised the question whether it might not be published under the name of a Group of the Medical Association.

Door Inscription. The following inscription was disallowed on a doctor's outer door (a glass door): 'African Surgery. Bantuspreekkamer, en ook in Sesoetho en Zulu'.

Entrance through Chemist's Shop. The owners of a building, in an upper floor of which a firm of dentists occupies rooms approached by a lift, propose to convert into a chemist's shop the hallway containing the ground-floor entrance to the lift. They were informed that this would be contrary to the Council's rules.

Building named after a Dentist. A dentist proposed to erect a building (in which he will have his surgery) and name the building after himself. It was decided that there was no objection to this.

Circular to Colleagues. A surgeon proposed to circulate amongst colleagues a card informing them that his practice now also embraced that of cardiac and vascular surgery. It was decided that this would be construed as advertising and would be most undesirable.

General Practitioner as Surgeon to a Hospital. A general practitioner was informed, in answer to his enquiry, that he might undertake surgical work at a hospital and hold a surgical post there, provided he did not hold himself out as a specialist.

Age-limit for Paediatrics. A hospital superintendent asked what was the upper age-limit which would still bring a child within the scope of paediatrics. It was decided to inform him that a specific reply could not be given, but purely for his guidance it was suggested that the age-limit should be the age of puberty, or 12 years, whichever came first.

Ophthalmic Surgeons and an Optical Business. It was proposed to promote a business providing an optical dispensing service, and to invite ophthalmic surgeons to take up shares in the company. It was decided on the facts submitted in an enquiry by the promoters that registered persons would be ill-advised to associate themselves with the proposed company before personally obtaining the Council's views.

Circulation of Reprints of Signed Articles by Pharmaceutical Firm. A doctor who has written an article concerning the action of a proprietary drug, which has been published in the *South African Medical Journal*, has been asked by the manufacturers of the drug to allow reprints to be made and circulated to the medical profession. The enquirer was informed that he would be ill-advised to give the permission sought.

Investing Money in Patent-Medicine Undertaking. It was decided to inform a doctor in reply to his enquiry that there would be no objection to his doing this providing he took no active part in the business.

Doctor as Representative of a Pharmaceutical Firm. In reply to an enquiry it was held that a doctor may not represent a pharmaceutical firm while registered as a medical practitioner by the Council.

Next Meeting of Council

It was decided to hold the next meeting of the Council on 19 September 1955, in Cape Town.

PASSING EVENTS : IN DIE VERBYGAAN

Dr. G. T. du Toit of Johannesburg, accompanied by Mrs. du Toit will be arriving at Cape Town on the *Boschfontein* on 25 April, after a 4 months' tour of America and Europe. During his sojourn in America Dr. du Toit attended the Annual General Meeting of the American Academy of Orthopaedic Surgeons in Los Angeles, where he gave a series of lectures.

* * *

Dr. G. T. du Toit van Johannesburg, vergesel deur Mev. du Toit sal op 25 April in Kaapstad aankom op die *Boschfontein* na 'n 4 maande toer van Amerika en Europa. Gedurende sy verblyf in Amerika het Dr. du Toit die Jaarlikse Algemene Vergadering van die Amerikaanse Akademie van Ortopediese Sjirurge in Los Angeles bygewoon, waar hy 'n reeks lesings gegee het.

* * *

The Third International Congress on Tomography (Laminography, Planigraphy) will be held in Genoa, Italy, on 3-12 October 1955, at the Radiology Institute of the University of Genoa. The Congress will follow similar lines to those held in 1950 and 1952. Tomography will be fully dealt with. Lectures will be given on theory, goemetical studies, technique and instruments and the various applications of tomography in exploring several organs, normal and pathological, will be illustrated. Special attention will be given to the most recent progress. Tomographical sets will be shown by Italian and foreign manufacturers, and visitors will be given the opportunity of practising under the assistance of the staff of the Radiology Institute.

Lectures will be delivered in the original language, but will be simultaneously translated into Italian, French, German, English and Spanish. Persons desiring to attend the Congress, are asked to communicate with the Secretary for External Affairs, Union Buildings, Pretoria. Further particulars can be obtained from Dr. Luigi Oliva, General Secretary, Istituto di Radiologica dell'-Università, Ospedale S. Martino, Genoa.

* * *

The Second International Congress of Allergology will be held, under the official sponsorship of the Brazilian Government, at Rio de Janeiro, Brazil, on 6-13 November 1955, at the Quitandinha Hotel.

The Congress is sponsored by the International Society of Allergology, and the following subjects will be dealt with: (1) Histamine and Mechanism of Allergical Reactions, (2) Drug Allergy, (3) Immunology and Allergy, (4) Asthma, (5) Dermatologic Allergy, (6) Helminthiasis, (7) Leprosy and Tuberculosis, (8) Hormones and Allergy, (9) Specific and Non-specific Treatments of Allergy, (10) Psychosomatic Aspects of Allergy.

Besides lectures, conferences and presentation and discussion of papers, motion-picture films and slides will be presented, visits will be made to the Congress Scientific Exhibition and Commercial Exhibition, and there will be social activities including banquets, cocktail parties, official visits and excursions and an official reception by the members of the Brazilian Government. Any medical practitioner is eligible as a member of Congress. The registration fee is US$15.00. Members may bring relatives or friends as accompanying members, for whom the fee will be US$6.00 each.

Prospective South African members should communicate with the Secretary for External Affairs, Union Buildings, Pretoria. For inclusion in the précis of papers, which will be published in the 4 official languages of the Congress (viz. Portuguese, Spanish, English and French) before the Congress, contributors should send 3 typewritten copies of their paper in précis form (not more than 3 pages), to the General Secretariat, Avenida Rio Branco 277, 9 andar, grupo 904, Rio de Janeiro, Brazil, before 31 July 1955. Contributors will be given 5 minutes for the verbal presentation of their papers.

* * *

South African Pharmaceutical Manufacturers' Association: With the rapid growth and development of Pharmaceutical Manufacture in the Union, the need for such an Association has become apparent, and 'S.A.P.M.A.' was inaugurated in May 1954 as a national body representing the South African pharmaceutical manufacturing industry. Membership is Union-wide and covers the major pharmaceutical manufacturing houses operating in Cape Town, Durban, East London, Johannesburg, Port Elizabeth and elsewhere.

The first Annual General Meeting was held in Port Elizabeth in March 1955, when Mr. R. J. Oswald was elected Chairman for the ensuing year and Mr. E. H. Lambert, Vice-Chairman. Secretaries are the Midland Chamber of Industries, P.O. Box 3051, Port Elizabeth, to whom enquiries may be addressed.

ASPECTS OF THE GROWTH OF THE HEART IN INFANCY

DR. E. N. KEEN

Department of Anatomy

At a meeting of the Research Forum of the University of Cape Town on 2 March 1955, Dr. E. N. Keen emphasized the importance of knowing the maturity of the subjects in making surveys of growth trends in infancy. A belief that there was a lag in the growth of the heart in the early postnatal period was in his opinion likely to be the result of the inclusion of premature subjects in the series studied.

The ventricles of about 230 normal hearts from birth to the age of 3 years were dissected in such a way as to separate the free wall of the right ventricle from the remaining ventricular myocardium. This procedure was shown to provide a statistically satisfactory guide to the relative growth of the two ventricles.

Weighing the fragments showed that in the first 2 months the right ventricular free wall atrophied by about 20% of its birth weight while the septum and the free wall of the left ventricle grew rapidly.

As a result of this contrary growth process the major change in relative ventricular status occurred in the 1st postnatal month, and a permanently stable relative ventricular status, as judged by the observations of weight, by 6 months of age. These findings contrasted with the electrocardiographic findings in normal infants and children.

BOOK REVIEWS : BOEKRESENSIES

HANDBOOK OF RADIOLOGY

Handbook of Radiology. Edited by Russell H. Morgan, M.D. (Pp. 518 + x with illustrations and tables. $10.00.) Chicago: Year Book Publishers. 1955.

Contents: 1. Definitions of Physical Terms and Units. 2. General Physical Information. 3. Radiotherapeutic Data. 4. Radioisotopes. 5. Radiography and Fluoroscopy. 6. Radiation Protection. Appendices. Index.

Radiology has been defined as 'that branch of Medical Science which deals with the use of radiant energy in the diagnosis and treatment of disease'. The title of this book is therefore somewhat of a misnomer since, whilst giving an enormous amount of painstakingly collected and very valuable physical data, its other sections in so large a field are necessarily deficient. It would perhaps perform a greater service if those sections on Radiodiagnosis were published separately and certain others, such as those on Radioisotopes, amplified to form a 'Handbook of Radiological Physics'.

Further this basically useful little book is marred by a number of minor technical errors in its generally clear and attractive production.

R.S.

SOSIALE KINDERHIGIËNE

De Sociale Kinderhygiëne in Nederland. Deur Dr. J. T. Buma. Pp. 105. f. 5.90. Assen: Van Gorcum & Comp. N.V. 1954.

Inhoud: 1. Inleiding en Doelstelling. 2. Definities. 3. Biologie van het Kind. 4. Psychologie van het Kind. 5. De Sociale Contacten van het Kind. 6. Algemene Beschouwingen. 7. Conclusies en aanbevelingen. Résumé. Summary. Literature.

Hierdie boek is uitgekies as die beste antwoord op 'n prysvraag van die *Bond vir Moederkunde en Kindergesondheidsorg in Nederland* oor die rigting wat hulle organisasie nou verder moet inslaan.

Geskrywe in 'n land waar ‚gastro-enteritis' en ‚aansteeklike siektes' as 'n oorsaak van dood op die leeftyd van 0-1 jaar verdwyn het, lewer die boek 'n oorsig wat vir enige land in die wêreld belangwekkend is, en dit nie enkel vir dokter of kinderarts nie, maar ook vir sielkundige of opvoedkundige.

Die gesonde selfkritiek is aangenaam om te lees; dit is verrassend om te sien in hoe min bladsye 'n groot aantal gesins- en skoolprobleme wetenskaplik gestel word en doeltreffende voorstelle aan die hand gegee word.

Die boek moet aanbeveel word.

E.J.

GYNAECOLOGY IN THE CONSULTING ROOM

Office Gynecology. By J. P. Greenhill, B.S., M.D., F.A.C.S., F.I.C.S. Sixth Edition. Pp. 517, with 127 illustrations. $7.75. Chicago: The Year Book Publishers Inc. 1954.

Contents: 1. Office Equipment Necessary for Gynecologic Practice. 2. Taking a History. 3. The Gynecologic Examination. 4. Examination of the Breasts. 5. Diseases of the Vulva. 6. Postpartum Care: Prophylactic Gynecology. 7. Trichomonas Vaginalis Vaginitis. 8. Vaginal Discharge Due to Mycotic and Similar Organisms. 9. Gonorrhea in Adults. 10. Vulvovaginitis in Children: Gonorrheal and Nonspecific. 11. Condylomata Acuminata. 12. The Uterine Cervix: Its Disturbances and Their Treatment. 13. Dyspareunia and Frigidity. 14. Psychosomatic Gynecology. 15. Sterility. 16. The Rubin Test: Transuterine Insufflation of Gas. 17. Hystersalpingography. 18. Artificial Insemination. 19. Culdoscopy. 20. Vaginal Pessaries. 21. Conservative Treatment of Pelvic Inflammation. 22. Pelvic Tuberculosis. 23. Vaginal Douches. 24. Backache. 25. Stress Incontinence and Genital Relaxation: Nonsurgical Treatment. 26. Control of Conception: The Safe Period or Rhythm Method. 27. Control of Conception: Mechanical Devices. 28. The Sedimentation Test. 29. Local Anesthesia in the Office. 30. General Anesthesia for Office Procedures. 31. Office Treatment of Bartholin's Gland Abscess and Cyst. 32. The Intracervical Stem Pessary. 33. Gynecologic and Obstetric Endocrinology. 34. Normal Menstruation. 35. Menstrual Irregularities. 36. The Climacteric or Menopause. 37. Senile Vaginitis. 38. Pruritus Vulvae. 39. Kraurosis Vulvae, Leukoplakia Vulvae and Chronic Atrophic Dermatitis of the Vulva. 40. Diagnosis of Preinvasive Uterine Carcinoma by Vaginal and Cervical Smears. 41. The Schiller Test for Carcinoma of the Cervix. 42. Invasive Carcinoma of the Uterus. 43. Intraspinal (Subarachnoid) Injection of Alcohol for Pain from Carcinoma of the Genitals. 44. Office Urology. 45. Office Protology. 46. Obesity. 47. Premarital Examination and Advice. Index.

‚Office Gynecology' is 'n uitstekende boek. Dit is een van die mees bruikbare boeke oor die onderwerp wat daar te verkry is en is nie alleen van waarde vir die algemene praktisyn nie maar ook vir die spesialis op die gebied. By uitstek kan die boek egter aanbeveel word by die algemene praktisyn en veral by die jong arts wat sy praktyk begin. Die inhoud dek byna alle toestande waarmee in aanraking gekom sal word in die praktyk en bowendien is die indeling duidelik en kan enigiets maklik en gou nageslaan word.

Een van die groot waardes van die boek is die kort en bondige maar tog duidelike manier waarop alle behandelings aangedui word. Dit is moeilik om 'n klagte of aandoening op die gebied voor te stel waarvoor daar nie 'n behandeling voor gegee word nie. Wat die boek so aantreklik maak is dat dit in klein formaat is en tog baie volledig is. Die skryftaal is bondig maar gee tog nooit die indruk van 'n opsomming nie.

Om 'n oorsig te gee van die inhoud is hier onprakties want die veld wat gedek word is te wyd, maar op 'n paar dinge is tog aanmerkings te maak. Eerstens moet gemeld word dat die illustrasies goed is en goed aangepas is by die teks, m.a.w. hulle is maklik leesbaar, duidelik en tog mooi. Die inhoud is tot op datum en nie verouderd nie. Dosyne hulpvolle wenke word gegee wat nie in die gewone teksboek te vinde is nie, bv. hoe vaginale uitspoelings nou juis gegee moet word.

Daar is nie juis fout te vind met hierdie bevredigende boek nie, maar op 'n baie belangrike punt verskil ek tog met die skrywer: nl. met die manier waarop die rekto-vaginale ondersoek gedoen word. Ek is oortuig daarvan dat veel meer gevoel kan word as die wysvinger in die vagina gehou word en die middelvinger in die rektum geplaas word. Op hierdie manier is die ondersoek meer gemaklik vir beide pasiënt en arts en kan ook veel meer waargeneem word.

Ten laaste wil ek net hierdie boek sterk aanbeveel by alle finale jaar mediese studente. Hulle sal vind dat dit maklike en interessante leesstof vir die naweek aanbied.

D. A. H. du T.

'Office Gynecology' is an excellent book. It is a very useful book for the general practitioner, and indeed the specialist also, to have. The field covered is extensive and the arrangement of the subject matter makes it easy to find the particular condition or treatment one is looking for.

One of the virtues of the book is the concise but still very readable way in which treatments are described. It is difficult to think of any gynaecological complaint or treatment not described. The descriptions are short and clear but never give the impression of summaries.

Because the field covered is so wide it is not practicable to give a complete review of the contents but a few things deserve mention. In the first place the illustrations are pleasant to look at and at the same time clear and easy to understand and well adapted to the text. Secondly the book is up to date and contains many helpful hints which the general practitioner will not find in any other gynaecological book.

One important point on which I do not agree with the author is the manner in which he advises the recto-vaginal examination to be made. In my experience it is far better to keep the index finger in the vagina while at the same time inserting the middle finger into the rectum.

In conclusion I would like to recommend this book to all final-year medical students. They will find that it contains enjoyable and interesting reading matter for the idle hours over the week-end.

D. A. H. du T.

CORRESPONDENCE : BRIEWERUBRIEK

RUBELLA IN PREGNANCY

To the Editor: In regard to Dr. Leon Vercueil's presidential address [1] published in the *Journal* of 26 March 1955, if gamma globulin 'may be given to (an elderly principara) and abortion ruled out' why not the same for any other woman who develops rubella in the first 4 months?

Surely the profession views abortion (and is teaching the public to view abortion) with far too much laxity? Our job is to cure—not kill; to find ways and means of saving both mother and child in conditions we think that pregnancy is harmful to the mother.

In many conditions where 'therapeutic abortion' (the easy way out—for the doctor—but only *seemingly* so for mother and child) was once the order of the day, better therapeutics now prevail, e.g. in heart diseases, tuberculosis, and so on. I'll back my psychotherapy any day against 'therapeutic abortion' to prevent 'the mental and physical effects the anticipation of a malformed child may have on a mother'; and if gamma globulin is the answer—why not use it in all cases?

We seem to take the lives of the unborn child quite for granted. Logically if it is right to take his life to prevent *possible* malformation, it is right to take his life (after birth) for actual malformation. Yet in practice we quite lightly take the life of the one and spend untold skill and time and money on preserving the life of the other—however useless it seemingly is. I believe in the sanctity of *all* human life.

I.M.P.

1 April 1955

1. Vercueil, L. (1955): S. Afr. Med. J., **29**, 303.